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Conference on

RESEARCH IN HOSPITAL USE

Report and Proceedings of a Conference Sponsored by the

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Foreword

Health authorities are painfully aware that our existing knowledge about hospital utilization must be greatly expanded if community, regional, and national planning is to be truly effective. We have become sophisticated enough to recognize, for example, that bed needs should not be established primarily on the basis of fixed bed/population ratios. But we have hardly begun to grapple with such problems as developing acceptable criteria for optimum use, refining data through multivariant analyses and other techniques, and determining exactly where the hospital belongs in the overall pattern of health facilities.

To stimulate fresh research in all phases of this complex subject, a Conference on Research in Hospital Use was held at the American Hospital Association Headquarters in Chicago on January 22–23, 1963. Sponsored jointly by the Hospital Research and Educational Trust of the American Hospital Association and the U.S. Public Health Service, it brought together more than 100 persons representing a broad range of professional disciplines. During two full days of formal presentations, panel discussions, and question-and-answer periods, the participants reviewed recent research, debated methodological problems, and explored areas where additional studies are particularly needed.

While there was general concurrence that further research will be difficult, time-consuming, and costly, it was encouraging to note the real progress evident in projects now under way. Perhaps the greatest value of the conference lay in having so many people honestly discuss approaches that had not worked and difficulties that must be guarded against in structured research.

We hope that the summary and the detailed conference proceedings will be useful to individuals and groups already working in this area, and that additional researchers will undertake serious studies of hospital utilization. The Public Health Service will give such studies a high priority in applications for grants under its extramural research program.

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Part I

General Summary

THE CONFERENCE IN REVIEW

In the last three decades the Nation's expenditures for health care have risen steadily, both in absolute terms and as a proportion of total spending. It is generally accepted that increased expenditures have been an important factor in the unprecedented medical progress achieved during this period and that further increases will be necessary if progress is to continue.

But as both the public and members of the health professions see mounting evidence that medical progress costs money, they become more and more insistent that the money be wisely spent. If this is true of medical care in general, it is especially true of the component elements of hospital care.

For years hospital costs have risen more sharply than overall medical costs—partly, though not solely, because hospitals have become a steadily more important part of the medical-care complex. Everyone agrees that hospitals are important, and everyone agrees that they must be used efficiently. But what constitutes efficient use? This question can be answered only by a body of valid research data covering all phases of hospital utilization—bed ratios, architectural design, personnel, quality of care—as well as such related matters as the nonhospital medical facilities available in a community, demographic factors, and the attitudes of local population groups on various health questions. Authorities freely concede that our present body of information in these areas is inadequate.

Purpose of Conference

The conference described in these pages represents a major effort to assess the current status of our research in hospital use, to chart the direction future studies should take, and to explore ways of making such studies. Despite sub-zero weather in Chicago at the time of the sessions, the meeting attracted more than 100 persons—physicians, economists, hospital and public health leaders, statisticians, and others with special interest and experience in utilization research. In effect, the participants provided the multidisciplined approach considered essential for further work in this area.

If any reader of this report expects to find ready answers to hospital problems, he will be disappointed. It was not that kind of meeting. The discussants were not dealing directly with the phenomenon of hospital use; rather, they were taking a searching, self-critical look at their methods of examining the phenomenon.

The importance and complexity of the subject were stressed at the outset by Chairman George Bugbee, Director of the University of Chicago's Health Information Foundation. The question of how to use hospitals effectively, he said, is "one of the major unresolved issues in the health field. . . . The hospital field and physicians have a job of either correcting faults or being able to defend present practices."

Greater knowledge about hospital use and its dimensions is essential, he added, particularly to aid in planning facilities and bed requirements. Better information is also needed for policy planning in evaluating total national expenditures and how they affect action by government.

Major Problem Areas

Although we have already learned some things from research in hospital use, Mr. Bugbee said, "there is more that we do not know than has so far been answered." He cited three problem areas where more work is urgently needed:

- It is known that there are broad variations in hospital utilization rates both among our own States and between the experience of the United States and that of Canada and countries of Western Europe. But thus far there has been no real definition of proper use—or even any agreement that such a definition is possible.
- The questions of use and quality of care are so interwoven that they are inseparable: "One cannot look at hospital use without examining medical care . . . and, further, the customs of the population using the care. . . ."
- We still require research to develop methods of studying utilization. Improvements in methodology are needed because, among other reasons, utilization research is a costly type of investigation and because up to now not enough experienced people have been involved in it.

Mr. Bugbee's words were underscored by Dr. Joseph H. McNinch, speaking as Director of the Department of Research and Education, American Hospital Association; and Director of the Hospital Research and Educational Trust. (Dr. McNinch is now Chief Medical Director of the Veterans Administration medical program.)

At first glance, he remarked, the amounts spent for medical care in this country do not seem excessive—especially when compared with what Americans spend for tobacco, watches, jewelry, and automobiles. But "totals and averages are often deceptive figures," he pointed out. "The average stay of between 7 and 8 days in a hospital, at an average cost of $35 a day, has little meaning for the individual who is hospitalized for 90 days at a daily cost which far exceeds the average."

Nor is money the only concern, he continued. The modern hospital requires skilled personnel with experience in many fields, and these personnel are in chronic short supply. Research on hospital use must continue to seek ways of increasing the efficiency of scarce medical manpower.

Review of Research

The conference program was devoted largely to studies already completed or currently in progress. But it also featured a panel discussion of research methods, another on recommendations for future research, and a comprehensive review of research on hospital use in the United Kingdom. Brief summaries of the various reports are presented below:

The importance of a multidisciplined approach was exemplified by the discussion of research methods. On the panel were representatives of five separate disciplines, each with unique study methods that might be brought to bear on the central problem. The overall goal of research in hospital use, it was agreed, was to promote better care of the patient, not only during the hospital experience but also in the life situation. Studies of medical factors—particularly long-range followup studies of hospitalized patients—would continue to be of primary importance. But studies of a socioeconomic nature—for example, cost analysis and opinion surveys—would play a valuable supplementary role in determining how efficiently medical facilities are used.

PERFORMANCE OF SURGEONS EVALUATED.—A new technique for evaluating the performance of surgeons in selected operations was described by Drs. Osler L. Peterson and Ernest K. Barsamian of Harvard Medical School. Working from records in selected Massachusetts hospitals, they rated physicians involved in the sample cases according to criteria that in effect broke down each case into component stages—preoperative diagnosis, agreement of diagnosis and pathology, specificity of surgery, complications, etc. Although their work was limited to a relatively few surgical procedures, it was suggested that the same technique might be applied to nonsurgical conditions and to broader sample groups.

ATTITUDE AND USE SURVEY.—An attitude and use survey covering some 2,000 hospitalized patients and their doctors, recently conducted in Massachusetts, was reviewed by Dr. Odin W. Anderson of the Health Information Foundation and Paul B. Sheatsley of the National Opinion Research Center. As Dr. Anderson pointed out, the attitudes of both the patient and the attending physician may have bearing on whether or not a patient is admitted to a hospital and how long he remains there. By questioning patients and doctors about the events preceding, during, and following actual hospital experiences, the researchers hope to throw light on the question of how much, if any, hospitalization is unnecessary. Given sufficient funds and personnel, future studies of this type might be broadened to include maternity cases. Also, if a survey were done on a population basis, information might be obtained on persons who required hosiptal care but failed to get it.

MICHIGAN STUDIES.—The Michigan studies dealing with hospital use were described by Walter J. McNerney. The subject was approached from several points of view which were briefly highlighted. In two of the studies the value of multivariant analysis in producing data that revealed varying utilization patterns among different population groups was demonstrated. The very accumulation of such data raised questions about the validity of existing hospitalization practices. Concurrently the Michigan research team launched its landmark study of a sample of patients with selected diagnoses, in which actual admissions experience was compared with standard practice developed by expert panels. The selection of these panels, some results of the study, and the relation of this approach to other attempts to define criteria were discussed in greater detail by Dr. Beverly Payne, Dr. Donald Riedel, and Thomas Fitzpatrick.

COLUMBIA STUDIES.—The significance of university research for community planning and program implementation was emphasized by Dr. Ray E. Trussell in his review of studies conducted by Columbia University's School of Public Health and Administrative Medicine. These studies, covering a wide range of problem areas and techniques, have played an important—sometimes controversial—role in providing data for city and State agencies, labor-management groups, health insurers, and others concerned with hospital utilization. Dr. Jack Elinson, discussing deta of three studies, pointed up the need to consid nonmedical, social forces in whatever planning done. Dr. Josephine J. Williams dealt with tl methodology of a recent survey of family medic care under three types of voluntary healt insurance.

HIP STUDIES.—Dr. Paul M. Densen ar Sam Shapiro discussed some questions raised b their studies of patients in the Health Insuran Plan of Greater New York compared with p tients covered under other forms of medical org nization. The studies revealed significantly low admission rates under HIP. After reviewin their data, the researchers concluded that at lea part of the differential was attributable to diffe ences in medical organization and methods of pa ing physicians. But other factors, such as the r lative availability of staff privileges, might also l involved.

Research in the United Kingdom

Turning from current research on hospit use in this country, the conference heard a detaile description of research on the subject in the Unite Kingdom, presented by Dr. J. H. F. Brothersto and Dr. J. O. F. Davies. It was apparent that th vastly different factors at work in the two countrie made specific comparisons virtually impossible. I was equally apparent that, despite differences i the overall pattern of medical care, the British an the American researchers have a number of basi problems in common.

Future Directions of Research

What of the future directions of researcl in hospital use? The panelists discussing this all important question were in general agreement tha future progress would depend largely on how muc time, money, and trained personnel could b brought to bear on the subject. Among the sug gestions for promising approaches:

- More experimental situations should b set up in which variables could be isolated an studied.

• For detailed multivariant analyses, broad-based population studies will continue to be essential.

• Greater use can be made of records already available in such organizations as Blue Cross and the group-practice medical-care plans—but more effort is needed to assure the completeness and comparability of such records.

• Whatever approaches are tried, the panelists agreed, the role of the doctor and the patient must be considered vital in the utilization process.

• Finally, it was emphasized that the hospital, though of pivotal importance, is only one element in the total system of medical care. The ultimate goal of research on hospital use, one panelist suggested, should be to bolster the effectiveness of preventive services to a point where fewer patients will need to be hospitalized.

Part II

Summary of Panel Discussions

The Need for a Multidisciplined Approach

PANELISTS:

Lester Breslow, M.D.: *Chief,* Bureau of Chronic Diseases, State Department of Public Health, Berkeley, Calif.

Jacob J. Feldman: *Director of Research,* National Opinion Research Center, Chicago, Ill.

Victor Fuchs: The Ford Foundation, New York, N.Y.

Donald C. Riedel, Ph. D.: *Director of Research and Planning,* Blue Cross Association, Chicago, Ill.

John Thompson: *Director,* Program in Hospital Administration, Yale University School of Medicine, New Haven, Conn.

Effective hospital care demands that many persons from related but distinct disciplines pool their efforts in a kind of synergistic action for the welfare of their patients. The same sort of multidisciplined approach is essential for effective research in hospital use.

The panel discussion of research methods provided examples of how various disciplines, each with unique study methods, can work together in examining fundamental problems of hospital utilization.

Dr. Breslow raised some questions about the validity of criteria for evaluating quality of care. Three categories of criteria, he commented, are being used or talked about in hospital utilization studies. The so-called "normative" criteria—for example, the usual practice regarding length of stay for delivery—are of rather limited value. A better criterion, he said, is that of expert opinion, as when a group of physicians reviews case records to determine if everything was properly done. But the ultimate criteria, he continued, must come from "so-what" studies that point up the relative value of alternative medical systems and techniques in terms of long-range results for patients.

Although conceding that such studies are difficult to do, he said that a few starts in this direction have already been made. For example, he cited the tumor registries in California, to which hospitals report not only beginning data about cancer cases, but also long-term followup data. An analysis of some 110,000 cases over a 20-year period showed that patients in voluntary hospitals have a significantly higher survival rate than patients in county hospitals. He also mentioned a study by the Kaiser Foundation Health Plan to investigate the effectiveness of the multiphasic health checkup—a battery of laboratory and physiologic tests combined with medical followup. A sample group of Kaiser subscribers is receiving such checkups. This group will be compared with

a control group of subscribers over a period of years to see if there are differences in mortality, morbidity, and physiologic measurement.

Economy Analysis Needed

"So-what" comparisons in the medical area do not eliminate the need for economic analysis of the situation, Victor Fuchs pointed out. "You might find that at the cost of $500 million in extra hospital services you are able to achieve a half percent better performance on your 'so-what' measure," he said. "Then the economist would ask you to balance that off against other uses that might be made of hospitals or physician services in terms of preventive care or annual checkups or something else. You would still be strung up on the fact that resources are scarce and . . . you have to make an allocations decision which involves an economic dimension."

Economic concepts relating to costs, demand, elasticity, production, and other factors are pertinent to the health and hospital field, he said, and he gave illustrations of how health authorities might use these concepts. He also urged that the health field make greater use of the economist's experience in other industries, especially what he has learned about labor and pricing problems.

Computer Simulation and Bed Requirements

Computer simulation programs can be a valuable tool for studying and predicting the effect of various utilization patterns on bed requirements, according to John Thompson. He described a Yale study of 33 Connecticut hospitals which showed these sharp variations when hospitals were analyzed according to size of the obstetric service:

Number of births a year	*Average occupancy (percent)*	*Direct cost of routine service per patient day*	*Net gain or loss on maternity per patient day*
2,000 and over	70. 6	$6. 22	+$1. 51
1,000–1,999	59. 9	6. 97	—. 86
Under 1,000	43. 6	10. 55	—7. 87

In this instance, he said, computers showed that the determiner of percentage of occupancy seemed to be size of service and that services below a certain size seemed uneconomic. His group is also using computer simulation to investigate the possibilities of operating most hospital services on the basis of a 5-day week. "We certainly would hate to build up a nice big 200-, 300-, or 400-bed hospital in order to experiment with this and then fall flat on our faces," he commented.

The Sample Survey

Another research tool—the sample survey—was discussed by Jacob Feldman. Although survey techniques are no panacea for hospital problems, he said they can be "quite useful adjuncts" to experimental programs, record studies, medical audits, and other research procedures.

For example, record studies "are frequently a more economic and reliable means of establishing relationships among certain variables." But a survey may be useful in showing what processes are operating to produce the relationship. He cited several specific research problems to which surveys might be applied:

- It is known that areas of high bed-to-population ratios have higher utilization than areas of low bed-to-population ratios. Surveys might show how this relationship operates—for instance, how the admission policies of physicians change in an area where a new hospital has been built or an old one shut down.

- Expert opinion and record analysis can establish that certain doctors did not follow recommended procedures in treating certain patients. Surveys of these doctors might help answer such questions as: What mental processes accompanied the omission of certain desirable procedures? To what extent was it "a matter of not knowing any better"? What situational factors acted as barriers to optimum performance?

- In seeking ways to control hospital use, somebody might set up an experimental program involving review committees, a public relations program aimed at staff doctors, and similar techniques. A survey of physicians and patients in such a situation might reveal how they felt about such matters as having more procedures done in doctors' offices, and what new alternatives might be used in certain situations that previously would have resulted in hospitalization.

Sociological Methods

Donald Riedel concentrated on two problem areas where sociopsychological methods might be particularly useful. Studies designed to measure faulty use invariably involve judgments by expert panels or by individuals. The role of sociologists and social psychologists here, he commented, would be to investigate the judgmental processes in such studies—for example, group judgment versus individual judgment and the effects various types of leadership have on group judgment.

Social scientists also can add a new dimension to current approaches to measuring quality of care, he indicated. One basic approach concentrates on the technique of administering care (e.g., proper surgical technique), while another basic approach seeks ways of evaluating the end result of the treatment process. But in most situations, Dr. Riedel emphasized, there is also an "intervening variable"—the patient.

"It is somewhat dangerous," he said, "to simply correlate variations in specifics of administration of care with the degree of recovery. . . . For many illnesses, therapeutic advice assumes major importance in the treatment process. To measure the adequacy of this advice is one thing, but to comment on whether this advice, per se, had an effect on the well-being of the patient, without determining how the patient interpreted and followed through on the advice, is something else.

"Very few studies have been done to determine the disparity between actual and perceived therapeutic advice, or on the factors influencing compliance with the advice. It may very well be that, in terms of wastage of our social resources, this area is just as important as studies of overuse of facilities."

A Plan for Dissecting Surgical Performance

PANELISTS:

Osler L. Peterson, M.D.: Department of Preventive Medicine, Medical School, Harvard University, Boston, Mass.

Ernest K. Barsamian, M.D.: Department of Surgery, Medical School, Harvard University, Boston, Mass.

The quality of medical care provided patients depends largely on the skill and performance of the hospital's medical staff. Thus one of the main goals of current research in hospital use has been to develop valid criteria for evaluating physicians' performances.

Drs. Peterson and Barsamian described one such study—an attempt to provide detailed, standard criteria for one segment of the spectrum of physicians' services. Expert criteria for surgical performance were developed which, in effect, separated various types of surgical experience into component parts—diagnosis, treatment, complications, etc. These criteria were applied to sample cases drawn from the records of selected Massachusetts hospitals. The ratings of individual surgeons were then analyzed through computers according to levels of training and according to hospital affiliation.

In discussing the need for such criteria, Dr. Peterson suggested that traditional measures of surgical skill are inadequate for today's demands. "There was a time when mortality rates probably would have reflected surgical skill," he stated. "But antibiotics, blood transfusions, better equipment, and better anesthesia have made surgery remarkably safe." Nor can the competence of individual surgeons be adequately measured by traditional credentials such as hospital staff appointments and membership in the American College of Surgeons: "In the United States most doctors expect to have hospital appointments . . . . It is only within the past few years that membership in the College has become difficult to achieve . . . ." Other methods of evaluating competence include the accreditation process, record review and tissue committees, and continuing

educational programs; but "the effects of these efforts are difficult to assess."

Logic Graphs

In preparation for the Harvard study, Dr. Peterson explained, logic graphs were constructed outlining the relationships between symptoms and pathology for all the diseases commonly found in the surgical records of community hospitals. These graphs made it possible to separate various types of surgery into a series of discrete steps or processes which systematized, for example, the relationships between symptoms and physical examinations, between symptoms and diagnosis, and between diagnosis and pathology.

"It is a well-recognized principle that the aggregation of data is usually attended with a loss of information," Dr. Peterson commented. "Separating surgery into a series of steps or processes produced a series of related but different judgments."

Appendectomies, cholecystectomies, and pelvic surgery were found suitable for study because they are "complex, serious, produce a tissue for pathological examination, and are performed by surgeons with all types of training." Criteria for the first two procedures included such points as whether the removed tissue was "normal" or "diseased"; whether transfusion was necessary; and whether complications arose.

Criteria for pelvic surgery were especially difficult to develop, Dr. Peterson indicated. The pathologist's finding of diseased tissue, for example, did not necessarily mean that surgery was called for. He reviewed how criteria were developed for one condition—uterine myoma—and how physicians handling cases of this benign disease were evaluated according to a 10-step scoring process.

Dr. Barsamian, explaining "the reason we went to all this trouble," remarked that "a whole chart . . . cannot be graded unless it is dissected into its component parts with each part considered separately for study." Another advantage to their approach, he added, was objectivity; their criteria were developed in advance by physicians not associated with the hospitals and surgeons under study.

Validity of Standards

Do these standards measure real differences in performance, or might they reflect merely one style of teaching? Replying to this question, Dr. Barsamian said the standards in this study "are far below those which I use in grading my second-year students in physical diagnosis. We think this is only fair because parts of the examination or findings might be omitted from the patient's record."

He conceded that these standards "are only as good as the people who make them. However, the advantage is that they apply to everyone and are reasonable, because we did not attempt to have them include anything that could be regarded as controversial. There are lots of things in medicine upon which two people will not agree. There are certain things, however, upon which all people will agree and a few other things upon which more than 95 percent of the people agree. This is what we have attempted to adhere to. Since our standards exclude controversial points, if they are cut down any further, some of their essence will be lost."

Although this study was limited to a relatively few surgical procedures, Dr. Barsamian suggested that the same approach could be used in developing standards for medical and obstetrical performance. Such standards might also be used in evaluating length-of-stay data.

Purpose of Scoring

The purpose of scoring the surgeons' performances was not to pass judgment on individuals but to provide information for computer analysis. As Dr. Barsamian put it: "We want to know if surgery is done equally well by the family doctor and by the fellow who has spent 4 years in surgery. We think not, but there is no conclusive evidence that this is so. . . .

"There are many other questions, such as the influence of the medical school on the end product, the influence of the hospital training program, the influence of the student's family background, and his degree of intelligence, which can all be answered once objective judgment of the medical or surgical care record is achieved.

"A form has been constructed for classification of doctors by specific criteria. By means of a simple checklist doctors can be classified by such criteria as length of training, medical schools attended, grades obtained, and type of hospital where training was obtained. All kinds of questions can be immediately answered by merely changing the classification at the top of the page, since the framework of evaluation of care remains the same."

A Survey of Hospitalized Patients and Their Doctors

PANELISTS:

Odin W. Anderson, Ph. D.: *Research Director,* Health Information Foundation, The University of Chicago, Chicago, Ill.

Paul B. Sheatsley: *Eastern Representative,* National Opinion Research Center, The University of Chicago, New York, N.Y.

The attitudes of patients and attending physicians obviously have an important bearing on hospital utilization patterns. To investigate the attitudes at work in a fairly representative U.S. setting, the National Opinion Research Center and the Health Information Foundation recently surveyed about 2,000 hospital discharges and their doctors.

From a representative sample of 50 general hospitals in Massachusetts, a sample of patients were interviewed in 1960–61, usually within a few weeks following discharge. Maternity cases were excluded. Sample cases were drawn from the hospital records over a 12-month period to avoid seasonal variations.

The patients were questioned extensively about their hospital experience and the events leading up to and following it. Each patient was asked to name the physician who recommended hospitalization and also the doctor who attended him in the hospital. (In about two out of three cases these were the same physician.) Interviews with these doctors made up the other part of the survey.

Massachusetts was selected as an area which has a well-developed hospital and medical establishment, rural and urban conditions, a range of occupations and similar factors present in most areas of the United States today. There are an estimated 600,000 non-obstetrical discharges annually from general hospitals within the State. The State has a relatively high hospital admissions rate—116 per 1,000 population, excluding maternity, in 1961—and one of the highest proportions of population covered by hospital insurance—about 80 percent.

Patient Interview

Discussing some results of the interviews with patients, Dr. Anderson reported that admissions and discharges corresponded "somewhat" to a 5-day week. Monday, for instance, had more admissions than any other day, while Friday and Saturday had the fewest. The obverse held true for discharges.

Same-day emergency admissions (including accidents) accounted for 32 percent of all admissions, while, at the other extreme, 33 percent of admissions were for illnesses that had been present for more than a year. Thus, about a third of all admissions required round-the-clock, standby facilities and personnel, he pointed out. "If we wish to add maternity care to the total of admissions, about 45 percent of all admissions are then on a standby basis."

About 47 percent of the patients said they had seen a doctor at the first sign of the illness for which they were hospitalized. About 49 percent had "waited awhile." The "great majority of those who delayed seeing a physician—almost 80 percent—gave as their reason that they did not believe their illness was serious enough, and only 3 percent of the patients mentioned financial reasons."

In almost four out of every five admissions, Dr. Anderson continued, the patient said that the

doctor recommending hospitalization had indicated that it was "absolutely necessary." About 93 percent of the patients reported that they had complied with the recommendation gladly or willingly.

Among the patients sent to the hospital for an operation, 94 percent had felt that the procedure was "absolutely necessary." It was interesting, said Dr. Anderson, that "only 3 percent of those who thought the operation was necessary volunteered the opinion that their lives were being saved, and that 80 percent felt that the operation would prevent more serious trouble in the future or relieve or correct the condition . . . . It is still within living memory when operations were regarded largely as a life-saving procedure."

What about unnecessary use? The survey showed a "gray area" of between 10 and 20 percent of all admissions where, Dr. Anderson observed, "decisions could have gone either way" regarding in-hospital or out-of-hospital treatment. Studies of that 10-to-20 percent might be helpful. In general, though, the results suggested that "neither doctors nor their patients are really pushing hard at the door of the hospital." He cautioned that this survey, being limited to patients who actually had been hospitalized, made no attempt to measure the extent to which hospital care was recommended but never received.

Physician Interviews

Paul Sheatsley described the steps taken to obtain the cooperation of the doctors selected for interview. The 2,046 patients who were interviewed named 2,681 doctors as their recommending or attending physicians. The National Opinion Research Council obtained complete interviews from 2,137 of these doctors, or 80 percent.

"I think this is a fairly remarkable record," Mr. Sheatsley said. One key factor in this showing, he added, was the close cooperation received from medical and hospital authorities in the State. For example, two notices about the survey appeared in the New England Journal of Medicine. The State medical society sent letters to each district society, explaining the study and asking the society to pass along the information to its members.

Just before the interviewing period began, the State society sent a mass mailing to all its member physicians, informing each that one or more of his patients might have been selected for study. (When N.O.R.C. wrote the doctors whose patients had fallen into the sample, a copy of this medical society letter was enclosed.) In addition, said Mr. Sheatsley, "we talked with the administrator in each sample hospital, and he often discussed the study with his medical staff and encouraged them to offer us their cooperation."

Another important element in the successful interview record, he commented, was "the care and skill in conducting the interviews." For one thing, "we were careful to get signed permission forms from the patients interviewed . . . . We concealed nothing from the doctors . . . . Our interviewers were alert, intelligent, resourceful women who had been extensively trained for this study. They were highly motivated and, above all, persistent. We gave the doctor all the time he needed. If the doctor was unable to give us an immediate appointment, we called every few weeks or wrote him a second letter . . . . I think all of this impressed the physicians with the importance of the survey and contributed to the results."

Michigan Studies in Hospital Use

PANELISTS:

Walter J. McNerney: *President,* Blue Cross Association, Chicago, Ill.

Beverly C. Payne, M.D.: School of Business Administration, University of Michigan, Ann Arbor, Mich.

DONALD C. RIEDEL, Ph. D.: *Director of Research and Planning,* Blue Cross Association, Chicago, Ill.

THOMAS B. FITZPATRICK: *Director of Research,* School of Business Administration, University of Michigan, Ann Arbor, Mich. (Now with Hospital Service Association of Western Pennsylvania, Pittsburgh, Pa.)

As Chairman George Bugbee pointed out, utilization rates are known to vary widely from place to place, but very little is known about "proper" hospital use.

A University of Michigan study, covering about 11,000 discharges from a probability sample of 70 Michigan hospitals in 1958, ranks as one of the most detailed efforts yet made to develop flexible, objective criteria for evaluating the validity of admissions, in-hospital services, and length of hospital stay.

Walter McNerney, reviewing earlier studies at the University's School of Business Administration, singled out a number of findings of basic importance to utilization research. For example:

- One study showed that persons with more than 70 percent of their hospital bill covered by insurance had almost twice the admission rate of those without insurance coverage. There was also some evidence that the seriousness of symptoms had little bearing on plans to get hospital care.
- Another study reported a "strong association" between hospital utilization and availability of facilities. For instance, "the largest single cause of variation in patient days, some 71 percent, was attributable to the number of beds available."
- In a study of large groups that left community-rated Blue Cross plans for experience-rated commercial insurance plans and vice versa, the groups leaving Blue Cross had a significantly lower average loss ratio than those leaving the commercial plans for Blue Cross.

Such studies, which consisted largely of statistical analyses of routine, available data, demonstrated the value of multivariant analysis in dealing with large population groups. However, as Mr. McNerney put it: "We wrestled during the early stages with the problem of how to measure the validity of hospital use."

Measuring Validity of Use

The Michigan group considered several possible approaches to this problem. A longitudinal approach was ruled out because it "promised to offer many technical as well as cost problems." Another possible approach was to have knowledgeable physicians look at the records and make professional judgments according to such things as history, physical examination, relevancy of the procedures, and length of stay. But this approach was discarded as too subjective: "It involved too many opportunities for physicians to rationalize differences. In the absence of any specific criteria or reference points, it would have been difficult to evaluate the results in retrospect or to have duplicated the method over time even within one institution."

The approach finally settled on was described by Mr. McNerney as "flexible criteria . . . developed by experts and applied to a probability sample of records in a probability sample of hospitals." There were some drawbacks to this method: It was time-consuming, and it raised the danger that the criteria would become "sanctified or used even when outdated." But through this method, he pointed out, "appropriateness of admission, relevance of procedures, and understay as well as overstay could be measured." And it had these other advantages: (1) It could reflect the "best thinking available at a given point in time, assuming the experts were well selected." (2) It could be objective, since criteria could be developed "prior to the evaluation and by different people." (3) The method "could be duplicated consistently within a hospital or among hospitals over time." (4) It could give "some substance to the idea of norms and still leave room enough for interpretation" through interviews with attending physicians.

Developing Criteria

As the survey progressed, criteria were developed for 18 diagnostic categories which in the aggregate covered 47 percent of all discharges from

Michigan hospitals. According to Dr. Payne, who described at length how the criteria were drawn up, the 18 diagnoses were divided among 7 expert panels consisting of from 3 to 6 physicians each.

In general, the panelists were physicians "who were considered outstanding because of their training, their participation in medical educational efforts, and who were recognized by the physicians in Michigan as a peer group." Each panel, in one evening of intensive discussion, drew up criteria relation to (1) admissions; (2) procedures necessary and consistent with the diagnosis; (3) complications that might affect length of hospital stay; (4) expected length of stay; and (5) indications for discharge. The criteria were then codified or listed in some coherent fashion.

The criteria were usually very rigid regarding admissions and flexible otherwise, said Dr. Payne. Length of stay, for instance, was stated as a range of days rather than as a specific number of days. The Michigan criteria were less detailed than those in the Harvard study discussed earlier. The reason, Dr. Payne explained, was that the latter is concerned primarily with quality of care whereas "we are concerned with the length of stay and appropriateness of admission."

Evaluating Data

Once criteria had been drawn up, teams of medical students with a physician in charge visited the hospitals in the sample and abstracted about 5,750 case records. Data were evaluated by three physicians and classified either as "understay," "appropriate stay," or "overstay." All cases considered overstay or understay, and a sample of the appropriate stays, were singled out for interviews with the doctors involved. Interviews were carried out with a total of 842 physicians who were responsible for about 1,700 cases. Final evaluation of the cases was made following the interviews.

Citing a few findings from the two-volume study, Dr. Payne recalled that 83 percent of the cases were "appropriate" stays, while 6.8 percent were understays and 9.6 percent were overstays. Two percent of the admissions were considered inappropriate.

As for the characteristics of the hospitals in the study and their medical staffs, he noted that the larger hospitals—"those having a large burden of welfare cases"—had not only a longer length of stay but also more inappropriate use of the hospital. This trend increased as hospitals assumed a large responsibility for teaching.

The Use of Research Data in Hospital and Community Planning

PANELISTS:

Ray E. Trussell, M.D.: *Commissioner of Hospitals,* City of New York, New York, N.Y.

Jack Elinson, Ph. D.: School of Public Health, Columbia University, New York, N.Y.

Josephine J. Williams, Ph. D.: School of Public Health, Columbia University, New York, N.Y.

While researchers seek to plug gaps in our knowledge of hospital use, persons concerned with hospital planning and program implementation must make important decisions on the basis of data currently available.

This point was repeatedly emphasized by Dr. Ray Trussell in his review of studies conducted by Columbia University's School of Public Health and Administrative Medicine. These studies—which used such varied techniques as household surveys, expert evaluation of case records, and statistical analysis of insurance records—have provided data for city and State agencies, labor-management groups, hospital planning councils, health insurers, and others concerned with hospital utilization. (As New York City's Commissioner of Hospitals, on leave from Columbia, Dr.

Trussell himself now implements policies based partly on research done under his direction.)

"At Columbia we are a group who enjoy doing something about the problems we study," he noted. This enthusiasm, he added wryly, "is not uniformly shared by certain hospitals or physicians in New York." Nevertheless, the use of research studies in hospital planning is "a healthy trend, provided research does not become perverted into a basis for indecision."

Pertinent Studies Reviewed

Among the studies described by Dr. Trussell, the following results were especially pertinent to research in hospital use:

- An analysis of Blue Cross records in the New York City area led to the conclusion that hospital cost per unit of service would continue to rise, partly because of unnecessary admissions and prolonged stay. Unnecessary hospital construction was singled out as a key factor in overutilization. As an outgrowth of the study's recommendation that hospital construction be dealt with at the local regional rather than at the community planning level, the State legislature created a Hospital Review and Planning Council and the Governor has encouraged formation of regional councils. "Currently in New York State," said Dr. Trussell, "we are involved in a bit of a strained situation about giving the Regional Councils the authority that we really think they should have to really do planning, to investigate unnecessary building and, at the same time, to encourage necessary building."

- A household survey and medical audit, covering hospitalized members (and families) of Teamsters Joint Council No. 16 of New York City, concluded that only about 80 percent of the hospital admissions received by this group were necessary, and that there was no indication for a substantial amount of the surgery performed. One of the germane results of this study was that Columbia University and Montefiore Hospital agreed to cooperate in maintaining a diagnostic center for Teamsters' members in a new wing built by the union. The Teamsters are also underwriting further studies of medical auditing techniques.

- A household interview survey of 300 families associated with New York City's hotel industry showed, among other findings, that about one-quarter of the hospital admissions were in non-accredited, proprietary hospitals and that about a quarter of the physicans that patients thought of as specialists actually were not. According to Dr. Trussell, the labor-management officials who ordered this study "were so disgruntled with the profile of care presented . . . that they made a policy decision to go into their own full-time group practice."

- A Columbia team headed by Frank Van Dyke is doing a series of studies of the medical care provided by New York City. One of these, recently completed, deals with patients hospitalized for 30 days or longer in a sample of voluntary and a sample of municipal hospitals. It was ordered, Dr. Trussell remarked, "to help me explain some of the problems to the Budget Director and the Mayor."

Among the long-stay patients in the four municipal hospitals in the sample, he added, "60 percent . . . were judged by an outside team of internists, social workers, and nurses not to be in need of general hospital care. Some could go home, and others could go to foster homes, to home care, or to nursing homes." This study identified "a whole series of problems which confront me and the city administration in dealing with this kind of patient." For example: "We are closing up substandard nursing homes faster than building new nursing home beds. We do not have enough social workers. Also, not all doctors are interested in following through on discharge plans for their patients. The administration becomes so used to an individual that sometimes you will find a patient who has been there for 2 years and has become a sort of pet of the staff. Also, even in the voluntary hospitals, which have a great deal more flexibility regarding which patients they take or do not take, 26 percent of the long stay patients did not need to be in an acute general hospital."

Studies Stress Social Forces

Dr. Elinson discussed three other Columbi studies: a survey of about 500 New Jersey physi

cians to determine what kinds of doctors they themselves use when they or their families need medical care; a survey of families in Puerto Rico, to explore patterns of utilization of medical care; and a hospital-utilization profile of the population of Washington Heights, the neighborhood in upper Manhattan that surrounds Columbia Presbyterian Medical Center.

None of these studies, said Dr. Elinson, could be considered a "so-what study" in the sense of evaluating the effectiveness of various approaches to hospital and medical care. Nevertheless, from this varied set of studies he drew a broad overall conclusion: that "there are very powerful nonmedical social forces, i.e., indexed by membership in social groups, which may have to be taken account of somehow in whatever planning is done." For example, the kind of hospital a person is likely to go to (in Manhattan) is a function of his skin color and religion: the doctor he visits in Puerto Rico depends on whether he is poor, rich, or middle class: and if a person is a member of a physician's family (in New Jersey), clearly enjoys a very special pattern of medical care.

Hospital Use Under Three Types of Insurance

Dr. Williams gave a detailed account of the methodological approach followed in a Columbia study published in 1962, "Family Medical Care under Three Types of Health Insurance." The purpose was to compare utilization and cost of hospital and medical care under three different types of health insurance plans. Matched samples were obtained from (1) New Jersey Blue Cross-Blue Shield; (2) General Electric's major medical plan; (3) the Kaiser Foundation Health Plan. The main finding on hospital utilization, according to Dr. Williams, was that, "considering the sampling variability, we found no evidence of any difference in hospital utilization between the three plans."

Hospital Use Under Varying Forms of Medical Care Organization

PANELISTS:

Paul M. Densen, Sc. D.: *Deputy Commissioner of Health,* City of New York, New York, N.Y.

Sam Shapiro: *Director of Research and Statistics,* Health Information Plan of Greater New York, New York, N.Y.

One frequently discussed "physician variable" is the form of medical organization under which doctors practice. Among the landmark studies in this area have been several comparisons involving patients who receive their medical care under the Health Insurance Plan of Greater New York, a group practice prepayment plan.

The basic approach of these studies, Dr. Densen recalled, was to "approximate the laboratory situation" by finding actual situations in which the hospital experience of an HIP population could be compared with that of a "reasonably comparable non-HIP group." The studies made no assumptions about what hospitalization has to do with quality of care, he added. "We simply were interested in seeing what happens to hospitalization under different ways of providing medical care."

In a 1955 study, Blue Cross records were used as a basis for comparing hospital utilization rates of HIP subscribers with those of comparable occupational groups insured by Blue Shield. The admission rate (non-obstetrical) was 59.6 per 1,000 population for the HIP group, 77.3 for Blue Shield. For adults 25 years of age and over, the comparable rates were 68.7 and 83.4.

The two groups reflected differences in medical organization and method of compensating physicians. But they also reflected differences in insurance benefits for medical care: HIP provided "comprehensive medical care across the board," whereas the Blue Shield benefits were largely limited to in-hospital services.

Dual-Choice Arrangements

In an effort to control the benefit variable, the HIP research group conducted a 1956–57 study among members of the Dress Joint Board of the International Ladies Garment Workers Union. These members were offered a dual-choice arrangement—they could choose medical benefits under either HIP or Group Health Insurance. The two programs were similar in Blue Cross benefits and medical benefits. They differed, however, in medical organization and method of paying physicians: GHI "has no medical care organization for which it is directly responsible. It works with the doctors in the community as does a regular insurance program."

Again in this study, HIP emerged with lower admission rates—63.8 for adults aged 25 and over compared with 72.8 for the GHI group. But what selective factors were operating which led one part of the membership to choose HIP and the other part to choose GHI? Dr. Densen cited evidence that "these selective factors, whatever they were, were not related to the question of health status." It was his guess, he added, that choice of plan in this situation was "not so much an individual decision as a decision based upon the particular attitude of the union leadership."

In another study of a dual-choice situation, the lower admission rates noted in the first two studies were not borne out. This comparison involved District No. 65 of the Retail, Wholesale, and Department Store Workers Union. Some of the members were insured for medical benefits under HIP, while the others were self-insured by the union.

"In essence," Dr. Densen commented, "we found no difference in the hospital utilization rate between the HIP group and the group that utilized the union's own program for providing medical benefits and hospital benefits." But he noted that this union "exercised a considerable control over the utilization of the hospitals by its membership. For example, it looked at the bills, and it conducted an educational program. This particular union has quite a paternalistic attitude—it tries to keep its membership pretty well identified with the union."

He stressed that, "although there was no difference in hospital utilization in these two groups, the hospital admission rates themselves are very low." For all ages, the HIP rate was 48.6 and the union-insured, 50.5 per 1,000; for adults 25 and over, the rates were 55.5 and 54.4, respectively.

Questions Raised

Dr. Densen and Sam Shapiro also discussed some "residual questions" raised by these studies. One question dealt with the possibility that lower HIP admission rates might be due in part to difficulty that HIP doctors may have in securing beds. To examine this possibility, the research group restudied data from the 1955 Blue Shield-HIP comparison with these results:

Classification	*1955 Admission Rates (Non-Obstetrical)*
Blue Cross-Blue Shield	77.3
Blue Cross-HIP	59.6
Classification by hospital appointment (HIP)	
Medical groups where at least ⅔ of family physicians have appointment on staff of one or more voluntary or proprietary hospitals	62.2
Medical groups where at least ⅓ of family physicians have appointment as *associate or attending* physician on staff of one or more voluntary or proprietary hospitals	62.3
Medical groups where less than ⅔ of family physicians have appointment on staff of one or more voluntary or proprietary hospitals	53.1
Classification by judgment about access to hospital beds (HIP)	
Medical groups where there is ample evidence that no special problem exists	67.4
Rest of medical groups (contains some medical groups where the problem, if it exists, is considered *not* to be important)	57.8

"If we take these data as they stand," said Dr. Densen, "it is hard for me to see how access to hospital beds in and of itself can account for the differences we have in the two studies. It may be a contributing factor, but it does not actually account for all of the differences."

Mr. Shapiro emphasized that, in comparison studies of this type, researchers should "be prepared for small but important differences. The margins in the first two sets of comparisons presented were 15 to 20 percent, and these could easily have been missed, if large samples had not been used."

Another important point, he added, is the "desirability of making comparisons between populations subject to similar local area conditions. The significance of this factor is apparent in view of the known variability of hospital admission rates and duration of stay by geographic area."

He also touched on a "residual question": How is it that, despite the generally lower HIP admission rates, the actual duration of stay does not differ substantially between HIP and other groups? Attemps to classify the early study material by diagnostic category had not answered this question, he indicated: "Briefly, no consistent patterns were found." He expressed the hope that other hospital studies would throw more light on the problem.

Research on Hospital Use in the United Kingdom

PANELISTS:

J. H. F. Brotherston, M.D., D.P.H.: *Dean of Medical Faculty, Professor of Public Health and Social Medicine,* University of Edinburgh, Scotland.

J. O. F. Davies, M.D., D.P.H.: *Senior Administrative Medical Officer,* Oxford Regional Hospital Board, Oxford, England.

British and American hospitals, Dr. Brotherston pointed out, are used in "somewhat different fashions." In the United States, for example, the hospital "is used more frequently, although for shorter durations of stay and with, apparently, a higher content of surgical activity." On the other hand, hospitalized British patients "are almost certainly much sicker" than U.S. admissions. And British data show much greater admission of isolates" (single and widowed) as opposed to those married—"suggesting that our hospitals are used to a greater extent to compensate for certain social deficiencies as well as to provide clinical care."

Such differences—themselves a reflection of more fundamental differences between the medical care systems as well as the overall cultural structures of the two countries—make direct comparisons in specific areas of hospital utilization virtually impossible. Yet it was apparent, from Dr. Brotherston's and Dr. Davies' review of recent British research, that studies in both countries have focused on many similar problems.

Bed/Population Ratios

In the past, Dr. Brotherston said, British studies of bed/population ratios sought to approximate some "ideal" figure; now, however, "there seems to be tacit agreement that 'need' . . . is too variable and elusive a concept to be measured. Instead, measurement of manifested demand is substituted." Various attempts to estimate bed needs, such as the "critical number" technique developed by Bailey, have suggested "an apparent equilibrium between supply and demand." Many factors (e.g., an enormous range in number of referrals by general practitioners) may serve to maintain this equilibrium. Studies dealing with the "phenomenon of supply apparently determining demand" seem to be "the best we have available," he said. But if this phenomenon is to be used in planning, he added, "it is essential to appreciate its limitations fully. Otherwise there is a real danger that we may be taken in by our own figures, and

begin to confuse 'manifested demand' with real need."

A number of assessments have been made—by record study and consultation with clinicians—in an attempt to evaluate whether patients actually occupying beds in general hospitals belonged there. Estimates of "misuse" vary between 4 and 25 percent of the patients studied, Dr. Brotherston said. Although such data are useful, he questioned how far problems of medical care can be divorced from the social context in which the problems exist.

Efficiency of Use

Increasing effort is going into studies designed to raise the efficiency with which existing hospital resources are used, he continued. Data arising from the National Health Service, for example, may be used eventually as a kind of external audit. A number of "so-what studies" have been conducted: One such study, which compared the outcomes of certain clinical conditions, showed a markedly higher mortality rate in nonteaching hospitals as opposed to teaching, and drew attention to the relatively more favorable staffing and other factors in the teaching institutions. But almost nothing has been done about studying medical behavior in the hospital, he said.

Some studies of outpatient services are now going on, Dr. Brotherston indicated. These are looking into such questions as who visits outpatient services, why they come, what happens to patients as they go through the system, what is the outcome, etc. In effect, this area of research is examining the "linkage points" between the hospitals and another major part of the medical-care system—the general practioners who refer patients to the hospitals.

Role of the General Practitioner

Both Dr. Brotherston and Dr. Davies stressed the need to supplement research on hospital use with studies of out-of-hospital facilities—notably the practices of general practitioners but including social services, homes for the aged, rehabilitation facilities, and other services.

The general practitioner is the first line contact in medical care for the great majority the British population, Dr. Brotherston point out; and he is also responsible for continuity care. But "of technical advance in general pra tice there is little sign—and for the simple reas that we have not yet found a means . . . to bri about an industrial revolution for the gener practitioner." In the early days of the Nation Health Service there were plans to establish healt centers to provide general practitioners with maj resources in equipment and personnel; but t health center idea "has not yet got off the ground

Followup studies of hospital patients ma "shatter complacency," he said. A 1954 stud suggested that the advisory aftercare service pr vided in Glasgow "seemed to have made little no difference in results. Ferguson reported th the Glasgow study makes it clear that, valuable they may be for short-term aid, the social servic at present available will not greatly affect the r sults of hospital care. He states, however, th better social and rehabilitation services might lea to improvement."

A "New Look" at Hospitals

Dr. Davies, who is "on loan" to the Ministr of Health from the Oxford Regional Hospit Board, described some current activities in th Ministry's Department on Hospitals.

As part of the Ministry's "new look," h remarked, the Department on Hospitals has begu to produce guide material on hospital planning—a sharp departure from the previous practice examining plans critically and commenting o them. Through the guides and informal discus sions the Department still exerts "a fair amou of influence" on projects proposed by region hospital boards, said Dr. Davies. Once a proje has been agreed upon, the regional boards are ex pected to keep within cost limits. But they ar "very much on their own insofar as actual con struction is concerned."

The latest approach to planning, he stresse "involves the provision of quite large hospitals, capable of providing good general, geriatric, an psychiatric service. The minimum number o beds for such a hospital would be no lower tha

300, while the maximum has not been specified. For a population of 150,000 persons, a hospital of from 600 to 800 beds would probably be required.

"The intention is to develop our outpatient departments and make them really effective instruments," said Dr. Davies. "We propose to give them what we call day beds—to which the patient can be admitted for the day or night for investigation desired that day. If the surgeon desires to do outpatient surgery, he can do it and have a bed available for the patient to rest before going home the same day."

The Department also has set up a small group to foster management studies—a kind of "intelligence section" to bring together knowledge about how hospitals are being run, distill it, and dispense the findings to the hospitals. Recent field studies by teams from the Department have revealed a variety of shortcomings in the actual operation of the hospitals visited. As Dr. Davies commented: "The more studies there are, the more it is seen that what actually goes on differs in some ways from what is intended. The more studies that lead intention to action, the better."

Guidelines for Future Research

PANELISTS:

Paul M. Densen, Sc. D.: *Deputy Commissioner of Health,* City of New York, New York, N.Y.

Walter J. McNerney: *President,* Blue Cross Association, Chicago, Ill.

George St. J. Perrott: *Acting Director,* Division of Research and Statistics, Group Health Association of America, Washington, D.C.

Willard A. Wright, M.D.: Council on Medical Service, American Medical Association, Williston, N. Dak.

Kerr L. White, M.D.: *Professor and Chairman,* Department of Epidemiology and Community Medicine, University of Vermont, Burlington, Vt.

J. H. F. Brotherston, M.D.: D.P.H.: *Dean of Medical Faculty, Professor of Public Health and Social Medicine,* University of Edinburgh, Edinburgh, Scotland.

There was general agreement among the panelists that more sophisticated studies of hospital use are needed. The current body of research information has provided a solid foundation, but future progress will require substantial increases in terms of the time, money, and trained personnel brought to bear on the subject. Each panelist also mentioned one or more specific approaches that warrant further study.

Experimental situations can be set up to investigate factors operating in the community at large which affect hospital utilization, Dr. Densen stated. He cited a current study involving a New York City welfare population. One thousand welfare patients are receiving comprehensive medical care through New York Hospital—services of staff physicians are provided in the hospital, in the home, in the outpatient department and, if necessary, in the nursing home. A control group is receiving medical care in the way usually available to welfare department clients—a panel physician arrangement which in practice results in a heavy concentration of home visits. The two groups are being compared in terms of utilization of medical facilities, visits to outpatient services, hospitalization rates, and the costs involved.

"Bolder Steps" Needed

Walter McNerney urged, in effect, that future researchers see the forest as well as the trees. "If I could express a general prejudice," he said, ". . . it is that more research needs to be done on a population basis and on an episodic

basis, utilizing many of the new sampling and analytical tools that have been developed in recent years. We are attacking too many problems on a highly segmented basis and finding ourselves unable to talk of meaningful results or implications. We now have both the insights and techniques to take bolder steps."

A great deal of work can be wasted, he warned, unless "qualitative references or measures of effectiveness are developed." Moreover, "when we talk about these types of research we are talking about major sums of money. We must, then, get used to the idea that $500,000 is not an improper amount of money to spend, especially in terms of the importance of the many policy decisions that are involved."

Potential Value of Group Prepayment Plans

Potentially, said George Perrott, the records of group practice prepayment plans offer an opportunity for doing population studies. But in actual practice the records of many of these plans are not adequate for intensive study.

He described a "barnstorming tour" of some 18 plans which he made recently as part of a study designed to collect descriptive data on their operation. "The plans visited varied in size from 2,400 to 564,900, embracing a total of 1,575,000 enrollees. Some own their own hospitals, some self-insure or hospitalize through Blue Cross, and some provide only out-of-hospital services. As might be expected, records kept and statistics derived from them vary greatly among the plans.

"One of our early findings was that the population base, though 'built-in,' was not always available for statistical tabulations and particularly not when the population was to be classified by age and sex. The raw data were on paper somewhere but not always easily accessible."

Despite this limitation, he added, the records of such plans could be of value in, for example, comparisons with hospital outpatient clinics. Moreover, efforts are being made not only to broaden the amount of population-based information but also to convince some plans that better record-keeping is important to them and to show them how to improve their records.

Clinician Plays Key Role

Dr. Wright, pointing to the interrelationship between hospital utilization and quality of medical care, suggested that "there is much to be learned by talking with representative physicians . . . . The person who is delivering the service is, after all, the one person who knows a lot of answers which you are trying to get in other ways. I would further suggest that no study or appraisal of the quality of medical care in an individual instance be considered complete unless the individual doctor who rendered the care has had an opportunity to explain the circumstances under which such care was given . . . ."

Dr. White, on the other hand, stressed that physicians are not the "sole arbiters of what is good for the public's health." Many other professions are involved, as are "the consumers who are footing the bill and are more and more interested in the sorts of services they want and the level of quality they expect."

"But Don't Forget the Patient"

He examined the "assumption that the object of health services is to keep people out of the hospital . . . . If you accept this assumption, you get away from the idea that the bed is the primary unit of medical care." He outlined several specific approaches that might open up if the focus of attention is shifted from the bed and the hospital to the patient and his complaint.

In the same vein, Dr. Brotherston described the operation of the medical care system as "essentially a partnership of patients and doctors in relation to professional people and administration." What is perhaps not sufficiently recognized, he added, is that the dominant partner is the patient. "The whole system goes into action simply because of the patient's aggravation—he presses the button and then the doctors and others jump about and do their stuff." But how good a job is the patient doing about recognizing symptoms? And how much patient-perceived illness has no attention paid to it by the doctor? Some sort of clinical checkup system, to be used in spot-checking the population, would be highly desirable, he said.

Part III

Proceedings

TUESDAY MORNING SESSION
January 22, 1963

The Conference on Research in Hospital [illegible] by the Hospital Research and Education Trust of the American Hospital Association and the U.S. Public Health Service, convened in the Hall of States, Headquarters, American Hospital Association, Chicago, Ill., at 9:30 a.m. Mr. George Bugbee, Director, Health Information Foundation, University of Chicago, Chicago, Ill., presided.

Opening Remarks

THE CHAIRMAN

[illegible] session. I would like to call the meeting to order.

You have your programs and the list of those registered to be in this 2-day session on Research on Hospital Use.

You can see, the list of those attending [illegible] a good representation of those concerned with the economic research in the health field, particularly those who have done some research in hospitals.

The overall objective of the Conference is [illegible] of current research, but hopefully, to see where we might have more information on this important subject.

The Health Services Research Study Section of the Public Health Service is meeting here Friday and Saturday. Dr. White, who is chairman of the section, and members of the section are among those present.

To try to survey the problem as chairman is pretentious, especially with this attendance; therefore, I will simply note a few high spots.

You are all conscious of the great increase in use and price—use of hospital care, medical care, physician services, drugs, as well as price increases in most of these services.

The combination of increased use and unit price in the medical care field has increased our expenditures from about 3.7 percent of gross national product in the late 1920's to a current 5.8 percent, with some $30 billion of total expenditures. This rising level of expenditures has caused concern throughout the medical care field. For example, the voluntary health agencies are concerned over the effect of these expenditures on

prepayment charges when they clear through government for approval of increased rates. Moreover, the public expresses its concern perhaps most articulately through various groups in labor and industry, as large purchasers of health insurance.

We need to know more about hospital use and its dimensions, particularly in planning hospital facilities and the number of beds required. The relation of use and quality of care is so interwoven as to be inseparable, as will be clear in presentations given you. This was clear in the abbreviated transactions of an earlier meeting which were mailed to all of you.*

We need better information for policy planning as we evaluate total national expenditures for hospital and medical care and as they affect action in relationship to participation by government. The hospital field and physicians have a job of either correcting faults or being able to defend present practices. This makes research pertinent.

The University of Chicago, primarily for its alumni, had a 2-day symposium last month on "Where Is Hospital Use Headed?" Current opinion was reviewed and suggestions for control were examined. Out of that meeting one might select a number of questions. For example: What is proper use? Is there a proper use? As will come out later, there is broad variation in use between our States and compared with Canada and countries in Western Europe. There is great variation in use and thus far no real explanation of differences or definition of proper use.

One cannot look at hospital use without examining medical care as it affects that use and, further, the customs of the population using care have great effect.

Having had one brief review of research in the December Symposium, I think it is clear that, while we have learned some things from the research, there is more that we do not know than has so far been answered.

I need hardly say that research on hospital use in difficult. We still require research to develop methods. Illustrations from present or past studies indicate it is a costly type of investigation. I think that the field would generally agree that not enough experienced people have been involved or interested.

With that brief summary of a few points, I will call on others. The hope of this Conference is that the people here and the people who read the transcript that will come from this Conference will be stimulated in thinking about this subject and will consider ways of producing information to shed light on what is one of the major unresolved issues in the health field.

The program needs little explanation. It is clear we will have a series of presentations. To the best of my ability, I will give equal time to those on the program. We purposely left the program flexible as to time for each speaker since time should depend on your decision as to how long the discussion is productive.

I would now like to call on representatives of the two organizations who have sponsored the Conference, the first individual being Dr. Joseph McNinch.

Dr. McNinch is a graduate of Ohio State University, receiving both his baccalaureate and medical degree there. Also he has a degree in public health from Johns Hopkins University. He has been editor of history of the Medical Department of the United States Army in World War II; Director of the Army Medical Library, now National Library of Medicine; Preventative Medical Officer in the Far East Command; Commander of the Army Environmental Health Laboratory; Commanding General of the U.S. Armed Medical Service Research and Development Command.

Dr. McNinch is Director of Research and Director of the Department of Research and Education, American Hospital Association, and Director, American Hospital Research and Educational Trust, Chicago.

I am happy to present to you General McNinch.

DR. JOSEPH H. McNINCH:

Mr. Chairman, Ladies and Gentlemen and Distinguished Guests: On behalf of the Hospital Research and Educational Trust, it is my pleasure to welcome you to this Conference on Research in Hospital Use sponsored jointly by the Hospital Research and Educational Trust of the American Hospital Association and the U.S. Public Health Service.

*U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Hospital and Medical Facilities, "Research in Hospital Use," Public Health Service Publication No. 930-E-1, 1962, Washington, D.C. 20201, 50 pp.

I particularly welcome Dr. J. H. F. Brotherston and Dr. J. O. F. Davies, who have come from Great Britian to participate in the Conference. Although the political concepts of medical care in the United Kingdom differ materially from those in the United States, I am sure that many of the problems have much in common.

I also want to welcome some guests from Canada: Dr. Murray Acker, Commission on Hospital Insurance, Saskatchewan Hospital Services Plan; and Mr. John Osborn, Director of Research and Statistics, Department of Health and Welfare, Ottawa, Canada.

Also, from Great Britain, we are privileged to have with us, Mr. Derek Harington-Hawes, Director General, International Hospital Federation.

I also want to express our appreciation for the opportunity to sponsor this Conference jointly with the U.S. Public Health Service. As we are all aware, there is a role both for government and nongovernmental organizations, institutions, and individuals in the provision of medical care in the United States and studies relating to the various problems concerned with this area.

Your chairman mentioned the costs of hospitalization and the rising costs. One might wonder why we, in a Nation that spent $7.5 billion for tobacco in 1960, $2.1 billion for watches and jewelry and almost $16 billion for new automobiles, would be so much concerned with the cost of medical care in this country. However, totals and averages are often deceptive figures.

The average annual family income figure is not of help to the single family with one-quarter of that average income. The average stay of between 7 and 8 days in a hospital, at an average cost of $35 per day, has little meaning for the individual who is hospitalized for 90 days, at a daily cost which far exceeds the average.

Moreover, the modern short-term hospital is a valuable community resource and it is made much more valuable by the shortage of skills required to provide all the services needed in the modern medical practice. Despite the many efforts to recruit and train more people in the skills required to operate this hospital, there seems little likelihood that shortages will be relieved or satisfied for some time. Because of our many technological advances, shortages of technically skilled and professionally trained personnel appear in almost every field in our society.

A major purpose of the Conference is to bring together you who have been conducting and participating in studies of the several different possible approaches to a better understanding of hospitalization and the use of hospitals. It is our hope that through an exchange of information and subsequent free discussion that research in this important subject can be improved, that studies can be so designed to increase comparability with other studies, and that additional qualified researchers will become sufficiently interested in the subject that the volume of research now being done will increase and new ideas and approaches be developed.

Finally, I want to acknowledge the contribution of your chairman. Many individuals have worked in preparation for this Conference; however, nobody has worked any harder and any more diligently than has George Bugbee. Therefore, on behalf of one of the sponsors, I want to express my appreciation to your chairman for bringing together this distinguished group of individuals and for preparing a program which, I think, will be highly beneficial.

THE CHAIRMAN:

Now, I would like to call on Dr. Jack Haldeman. Dr. Haldeman received his medical degree at the University of Oklahoma and his degree in public health from the University of Michigan. He is a long-time officer in the Public Health Service, some 21 years, with varied administrative assignments—3 years in research and, of course, those of you who know Jack, know he likes to talk about his 3 years in Alaska, where he developed the Arctic Health Research Institute.

I should like to now call on the Assistant Surgeon General, who is Chief, Division of Hospital and Medical Facilities, Dr. Jack C. Haldeman.

DR. JACK C. HALDEMAN:

On behalf of the Public Health Service, I would like to welcome you to this Conference. George Bugbee and Dr. McNinch made my talk for me and, therefore, I am not going to repeat it, except to merely say that during the next two days I hope we will address ourselves largely to three questions: first, what studies are being conducted in the field of research on hospital use; second,

what studies should we be conducting; and third, how should we go about developing these studies?

I would like to reiterate only one thing—that I hope, as a result of this Conference, some of you who are not now undertaking research in the general area of hospital research, will undertake to do so. I do not know any area in the field of hospital research that should have a higher priority at this time and, certainly, we in the Public Health Service will give applications for grants in our extramural research program in this area a very, very high priority.

THE CHAIRMAN:

Many of you know Osler Peterson, Professor in the Department of Preventive Medicine at the Medical School at Harvard, who was connected with the Rockefeller Foundation, concerned with organization of medical care and the quality of care. One of his outstanding studies concerned general practice in North Carolina.

Therefore, it is a great pleasure to call on Osler. I will likewise request him to introduce Dr. Barsamian, his associate, at the proper moment.

A Plan for Dissecting Surgical Performance

DR. OSLER PETERSON:

Dr. Barsamian and I come from different fields. He is a member of the Surgical Faculty of the Medical School and is probably best described as the man who directs most of the research activities of the Surgical Service at Boston Hospital. He came to work with us in the Department of Preventive Medicine a couple of years back. I think that at first, he, as a surgeon, was rather skeptical about the medical care studies we were proposing. However, as we have worked together, we have both become increasingly interested in a study that has also become increasingly complex.

We had difficulty deciding who was going to do what today. It was finally decided, inasmuch as I could read well and he could think well, that I would read the paper and Dr. Barsamian would discuss it and answer questions later. Now, if they are ready in the projection room, I think we can begin.

(Dr. Peterson illustrated his paper with slides.)

In most countries hospital staff appointments are given only to a small number of well-trained doctors. In the United States most doctors expect to have hospital appointments. This includes men with superb qualifications as well as others whose preparation is only a rotating internship. (This is like a frosting—it is thin and insubstantial and may disguise the substance of the cake itself.)

In a population study performed several years ago, Odin Anderson found that about one-half of the people who had had surgical procedure performed had been operated upon by surgeons certified by a surgical board or Fellows of the American College of Surgeons. It is only within the past few years that membership in the College has become difficult to achieve, so that even the value of this latter qualification is variable.

A number of measures have been taken to protect the quality of hospital care when the skills of the staff are variable. Among these are the accreditation process, the record review and tissue committees, and continuing educational programs. The effects of these efforts are difficult to assess. It seems likely that the time will come when hospital practice will be limited to smaller numbers of highly qualified doctors, or alternatively, effective measures of performance will have to be developed to determine competence of individual doctors whose qualifications are not the best.

This study, which originally sought to measure the effect of internship and residency training on clinical competence, led to the selection of surgery as its subject about two and one half years ago. Hospital surgery was chosen because surgeons are required to write an operative report, register a preoperative diagnosis, and most important, much of their work produces a tissue which goes to the pathologist for a second and independent diagnosis.

There was a time when mortality rates probably would have reflected surgical skill. But antibiotics, blood transfusions, better equipment and better anesthesia have made surgery remarkably safe. Direct observation of the surgeon o

late evaluation of the quality of survival of his patients were dismissed as impractical. It was decided, therefore, that the study would have to deal with material that could be obtained from hospital records.

The population of operations for sampling is obtained from the operations register. Appendectomies, cholecystectomies, and pelvic surgery have been found suitable for study because they are complex, serious, produce a tissue for pathological examination, and are performed by surgeons with all types of training.

The responsible surgeons were grouped by yearly training intervals into four classes, the lowest of which had a year or less of training, and the highest of which had more than 4 years of training. There were great differences in the amount of surgery done by individual surgeons so that it was obviously desirable to sample each doctor class with the proviso that X number of patients of each doctor would be selected.

Results

The first two hospitals studied seemed to support the thesis that better training was associated with better surgical care. In hospital No. 1 the normal appendices removed by the fully trained surgeons were about 15 percent of all primary appendectomies. Among minimally trained surgeons this proportion was about 32 percent. In hospital No. 2 the gradient was almost precisely the same, but at a different level. Here the fully trained surgeons removed 8 percent of normal appendices while the untrained surgeons removed 16 percent. The minimally trained surgeon often failed to explore the common bile duct when indicated in the course of cholecystectomies. The complications attributable to surgery (e.g., wound infection) were more common among the patients of the minimally trained doctors than among those of the fully trained. The well-trained surgeon had to transfuse fewer patients who had pelvic surgery and generally employed this important therapy in more orthodox fashion than the minimally trained doctors. Pelvic surgery is a bloody operation—the average loss is about 900 cc. The performance of indicated laboratory work was also related to the doctor's training.

There was also a hospital effect. The two hospitals were very different in many ways and the surgery performed may have reflected morale, competence of the chief of surgery, and other qualities which were not readily measurable.

When the study was extended to hospitals No. 3 and No. 4, none of these relationships were evident. Virtually all of the surgeons performed at a level compatible with minimal training.

The pathology of pelvic surgery does not sort itself into precise categories labeled "normal" or "diseased" as do gall bladders or appendices. The common benign growth, the uterine myoma, furnishes an example of the problem as well as the many processes available for study. Myomas are said to be present in about one-third of women beyond the age of 35. Most are small. They often produce no symptoms even when quite large. The diagnosis of this benign disease rests solely upon the findings at physical examination. Symptoms are irrelevant to the diagnosis. The severity and the duration of the symptoms normally determine whether surgery is indicated, because an asymptomatic fibroid is operated upon only if it is increasing rapidly in size. The first process, therefore, that one studies is the severity of the symptomatology as a justification for surgery. Since the symptoms produced by fibroids are so uncertain, it is necessary to define the conditions under which they do cause disease. These definitions follow:

1. a submucous fibroid where the sympton is bleeding.
2. a single fibroid 5 cm. or greater in size.
3. multiple small fibroids enlarging the uterus to twice normal size.
4. a degenerating fibroid.
5. torsion of a pedunculated fibroid.

If any of these are present, then pathology justifies the diagnosis. If there are no fibroids, the diagnosis is wrong. If the doctor describes a definitely enlarged fibroid uterus and a normal uterus is removed at operation, an additional judgment is possible—that the doctor's pelvic examination was not competent. If small fibroids that do not meet the size requirements stated above are present, the diagnosis is correct but is greater than or exaggerates the pathology. The permissible surgery for fibroids varies with the nature of the complaint. Symptoms may be sufficient or insuffi-

cient to justify surgery. If the symptom is sterility or frequent abortions, a myomectomy is the only permissible operation. If the symptom is bleeding, a dilatation and curettage is vital before further surgery is undertaken. Examples of surgeons who omitted this procedure and failed to detect the hyperplastic endometrium or the endometrial polyp which was the cause of bleeding are not infrequent. Hysterectomy under these circumstances is the wrong operation. With many processes to examine, the probability is that doctors who do not understand all the issues involved in pelvic disease will reveal their uncertainty by what they do or fail to do.

As part of the preparation for this study of pelvic surgery, logic graphs were constructed outlining the relationships between symptoms and pathology for all the diseases commonly found in the surgical records of community hospitals. With graphs to systematize the relationships between symptoms and physical examinations and diagnosis and of diagnosis to surgery and to pathology, etc., it became possible to separate pelvic surgery into a series of discrete steps or processes.* It is a well-recognized principle that the aggregation of data is usually attended with a loss of information. Separating surgery into a series of steps or processes produced a series of related but different judgments.

The series of processes studied are outlined in table I. The first process, the study of the clinical history, required the formulation of separate standards for different presenting symptoms. The symptoms of pelvic disease are disorders of uterine bleeding, pain, masses increasing in size, sterility, and those such as incontinence and bearing down that are related to relaxation of the pelvic floor. Table II illustrates how the completeness of a history is scored in relation to a disease in which uterine bleeding is the presenting complaint. The first essential of a good clinical history is that the presenting complaint be clear. To be clear a presenting complaint must identify a major symptom and its duration. If one or both of these bits of information is missing, the history is scored as 0. If both are present, the history is scored 1. In any disease involving uterine bleeding the next question that would be asked would relate to the fact of whether the patient was pre- or post-menopausal, and if pre-menopausal, the facts relative to the menstrual cycle and childbearing. These, when present, raise the score to 2. As additional bits of relevant information are added, the score can be raised stepwise to 3 and 4.

TABLE I. PROCESSES EVALUATED

1. Completeness of clinical history by preoperative diagnosis.
2. Completeness of physical examination.
3. $S_1+P_1+L_1=D\varpi$ (Workup=diagnosis)
4. $S_2+P_2+L_2=S\mu$ (Workup justifies surgery)
5. $D\varpi=P_a$ (Agreement of diagnosis and pathology)
6. Specificity of surgery
7. $P_{c1}=P_a$ (Agreement of clinical pathology and pathology)
8. Appraisal of tissue removed
9. Postoperative care
10. Complications

TABLE II. HISTORY CODING RELATED TO UTERINE BLEEDING

A. Chief complaint not recorded or identifiable. Mention chief complaint without duration.	SCORE 0
B. Mention chief complaint+duration.	SCORE 1
C. (B) plus:	
Premenopausal patient	*Postmenopausal patient*
1. LMP or negative pregnancy test	1. Mention Menopause
2. Duration LMP or interval	
3. Flow (if major complaint spotting)	
Married patients	
1. Children	Two must be mentioned.
2. Pregnancies	
3. Abortions	SCORE 2

The first half of the scoring procedure for the physical examination is shown in table III. This begins with the assumption that pelvic manual or rectal examinations are vital when pelvic

*Dr. Frank Easterday and Frank Ingersol, members of the Harvard faculty, gave much help in this work.

surgery is contemplated and should be recorded. In the absence of these examinations the physical examination is coded as 0 and if the result of one is recorded, the score is raised to 1. If in addition to the pelvic and rectal examinations there is an examination of the abdomen for tenderness or masses, the score is increased to 2. In similar fashion, the addition of other bits of important information that indicate that a complete examination was done may raise the score stepwise to a maximum of 5 for a very complete examination. The failure to record information about the pelvic, rectal, and abdominal examinations produces a disproportionate number of very low scores in some hospitals. While a good gynecologist should invariably do both a pelvic and rectal examination, we have compromised this standard by permitting a doctor to score higher on this scale when only one is recorded, if in addition there is evidence that the remainder of the examination was carefully and completely done. Item "D" provides for such a case. This is proper since it is possible that negative examinations may not be recorded even though performed.

TABLE III. PHYSICAL EXAMINATION CODING

A. Pelvic manual or rectal examination not recorded.	SCORE 0
B. Pelvic manual or rectal examination recorded.	SCORE 1
C. Pelvic manual examination ± speculum examination Rectal examination Abdominal examination for 1. Masses 2. Tenderness or spasm OR	SCORE 2
D. Pelvic manual or rectal examination ± speculum. Abdominal examination for 1. Masses 2. Tenderness or spasm 3. Liver and spleen Two of the following: 1. Scars 2. Bowel sounds 3. C.V.A. Tenderness 4. Hernia	SCORE 2

The next process studied is the relationship between workup and diagnosis—process 3 of table I. It will be noticed that this is described as S_1, P_1, etc. in contrast to the next process in which the relationship between workup and surgery is examined where symptoms are coded as S_2 and the physical examination is P_2. These different subscripts are given to S and P because the symptoms and physical findings that may be sufficient to justify diagnosis may be quite different from the symptoms and physical findings that are adequate to justify surgery.

TABLE IV. STEIN-LEVENTHAL SYNDROME (COMMON SYMPTOMS)

SYMPTOMS:

A. Age under 30 years.

B. One of the following:

i	Amenorrhea			
ii	Oligomenorrhea		Duration	
iii	Irregular intervals	S_1	4 years	S_2
iv	Sterility—if married		Duration	
	no children		2 years	

$S_1^+ = S_1 + A$ (for workup=Dx.)

$S_2^+ = S_2 + A$ (for workup=surgery)

LAB:

i	D & C shows secretory endometrium	$=L-$
ii	D & C not done	$=L$
iii	D & C shows other	$=L+$

PHYSICAL EXAM:

i	Bilaterally enlarged ovaries	$=P+$
ii	Normal or not done	$=P^P$
iii	Unilateral ovarian enlargement	$=P-$

In table IV, the common symptoms of the Stein-Leventhal Syndrome are listed. This rather uncommon disease is shown because it is sufficiently simple to serve as an illustration. Patients with this disease are normally young and complain of amenorrhea, oligomenorrhea, irregular menses, and, if they are married, of sterility. The critical physical findings in this disease are bilateral enlarged ovaries. These large ovaries have a thick capsule that may be related to the failure of ovulation and the sterility and menstrual disorders for which the patient seeks attention. These patients are sometimes obese and show increased hirsutism.

Since these latter symptoms may or may not be present, they are of no value in decision-making and are, therefore, omitted. It is necessary to define symptoms which may be adequate for a diagnosis and others which are adequate for surgery. The presence of scant menses with bilateral enlarged ovaries in a young woman are sufficient to justify a diagnosis. Because menses are often slow in being established and because some women with Stein-Leventhal disease ovulate rarely and hence may not be completely sterile, evidence sufficient to establish the diagnosis is not enough to justify the operation. Hence, before surgery can be justified one can conservatively demand that the menstrual irregularities must be of at least 4 years' duration or that sterility must have been present for at least 2 years before surgery can be justified.

Under laboratory is included another vital bit of information. Women with this disease are sterile because they fail to ovulate. Before surgery is contemplated, a gynecologist could determine the fact of ovulation or nonovulation by having the patient keep a temperature record. Since no evidence relative to this simple examination has been found in any patient records studied, it seems fair to ask that similar information be obtained by curettage. This is particularly true since all pelvic surgery should normally be preceded by a curettage of the endometrium. As can be seen, if the endometrium is secretory, this is coded as $L-$ since this finding is incompatible with the diagnosis, because it means that the patient is ovulating. Under the physical examination the bilaterally enlarged ovaries that are the hallmark of this disease are coded $P+$.

Table V, shows the logic graph from which the programer works. It can be seen from lines A, B, or C that, if the symptoms or physical findings or the laboratory are negative, neither the diagnosis nor the surgery is justified. From line D it can be seen that, if the symptoms are positive, the physical findings characteristic, and the endometrium in appropriate stage, the diagnosis is justified. In line E, S_2, the characteristic symptoms with a defined duration, has been substituted. If S_2 is positive, together with $P+$ and $L+$, the diagnosis is correct and surgery justified. If any two of this triad (S, P, or L) are positive and the other is not recorded, the diagnosis is only possible and surgery doubtful.

TABLE V. STEIN-LEVENTHAL SYNDROME (LOGIC GRAPH)

	Sx	*Px*	*Lab (D&C)*	*Workup = Dx.*	*Workup = Surgery*
A.	$S-$			No	No
B.		$P-$		No	See ovarian cyst.
C.		$L-$		No	No
D.	S_1+	$P+$	$L+$	Yes	
E.	S_2+	$P+$	$L+$	Yes	Yes

If two of the triad (S, P, or L) are positive and the third is not mentioned, Dx = Possible; Surgery = Doubtful.

Although the Stein-Leventhal Syndrome is a poorly understood disease, it is a discrete entity so that a diagnosis determines accurately what the expected symptoms, physical findings, and laboratory studies will be. If the preoperative diagnosis were sterility (and this is normally the reason for operating upon women with Stein-Leventhal Syndrome), this would not be a precise diagnosis since sterility is a symptom that may be caused by many different diseases. Similarly there are many identifiable causes for uterine bleeding such as an endometrial polyposis, cancer, and adenomyosis. Many preoperative diagnoses are vague or merely a reiteration of a symptom such as uterine bleeding. Quite clearly the adaptation of a logic system to vague or symptomatic diagnoses presents special problems. Equation III, workup = diagnosis, of table I can only be coded as "no" since there is no diagnosis.

An attempt has been made to determine in the face of a vague or symptom-diagnosis whether workup justifies surgery. If the preoperative diagnosis is a symptom such as uterine bleeding, the indications for surgery can be determined only if the logic system examines the symptoms and the physical findings in relation to all possible diagnoses that might cause bleeding. Constructing logic graphs for this situation has been one of our most onerous and tedious exercises in formulating this study. This process also flirts with computer diagnosis since the system seeks to find a diagnosis which fits the symptoms and physical abnormalities recorded.

In table I the fifth process listed is "agreement of diagnosis and pathology." This is shown in table VI. If the diagnosis was Stein-Leventhal

TABLE VI. STEIN-LEVENTHAL SYNDROME, AGREEMENT OF DIAGNOSIS AND PATHOLOGY

PATHOLOGY SHOWS	
Thickened Capsule, Bilateral No Corpus Luteum Corpora Albicantia Rare or Absent	Characteristic of S–L Syndrome (Code 4)
No Capsule Corpus Luteum Present Corpora Albicantia not Rare	Not characteristic of S–L Syndrome (Code 1)

TABLE VII. STEIN–LEVENTHAL SYNDROME SPECIFICITY OF SURGERY

Bilateral Wedge Resection:	Adequate (Code 4)
Unilateral Wedge Resection:	Too limited (Code 3)
Oophorectomy, unilateral or bilateral, with or without hysterectomy or hysterectomy alone:	Wrong (Code 1)

Syndrome and the pieces of ovary removed are normal ovarian tissues, the diagnosis is obviously not in agreement with the pathological result.

Item 6 in table I, the specificity of surgery, seeks to define whether the correct operation was performed. For example, a hysterectomy and oophorectomy performed where the only pathology is a benign ovarian cyst, is surgery that is too extensive. Some ovarian cysts are found in both ovaries as is the case with the dermoid. Since a dermoid is benign, the only surgery required is excision of the cyst. If the whole ovary is removed, this is too extensive, unless the ovary has been totally replaced. Since about 20 percent of dermoids are bilateral the record should show evidence that the second ovary was inspected or biopsied at operation. If this is not done, the operation is coded as too limited.

In table VII, grading of specificity of surgery in the case of the Stein-Leventhal Syndrome is shown. In this disease a wedge should be removed from each ovary. No other surgery is indicated. If only one ovary is done this would be too limited and anything else would be wrong since it would be likely to compromise the patient's possibility of childbearing. It is strange to note that patients have occasionally had a hysterectomy when their complaint was sterility!

Since the clinical pathology as recognized by the doctor at operation determines the surgery, an examination of the agreement between the clinical pathology and the microscopic pathology is an important test of the doctor's judgment. It is apparently a normal human characteristic to exaggerate the extent of pathology at operation. However, recognition of the essential nature of the pathology at this critical time is a real test of the doctor's skill. In the Stein-Leventhal Syndrome the ovaries are characteristically large and pale. Operative descriptions of Stein-Leventhal ovaries which the pathologist described as normal clearly indicate that the surgeon was not sufficiently acquainted with the appearance of these ovaries in situ.

Other procedures studied (Nos. 9 and 10) deal with complications attributable to the surgeon and postoperative care. The fact that pelvic surgery is extensive and bloody and associated with frequency complications, presents many opportunities for study. For example, if a patient suffers shock or serious blood loss at operation it is fair to ask that a postoperative hemoglobin be obtained. If the patient develops a wound infection it is fair to demand that therapy be guided by culture and sensitivity tests. Thus it is possible to build up a profile of the postoperative care that can be described numerically in terms of good, fair, or poor. Complications are coded by their gravity as death, major, and minor.

This outline for the study of pelvic surgery did not spring from someone's brow full-blown. At first, performance as judged in the record was graded as good, fair, or poor. These judgments were not reproducible. It became obvious that the processes that made up the performance had to be dissected and rules for judgment clearly defined. The decision was therefore made to outline in great detail each step on the logic graphs of surgery in such a fashion that the process about making decisions as to the appropriateness of diagnosis or of surgery could be programed for a computer and thus eliminate the continuing human variation. This was a commitment to do an

enormous amount of work because of the complexity of symptoms and the variable physical abnormalities recorded for half a dozen common pelvic diseases to say nothing of the variable treatment possibilities.*

Medical Records Incomplete

Frequently the physician or surgeon knows a considerable amount of medical history about his patient which is not recorded. In the case of pelvic surgery, it is quite clear that social factors often play a large part in the decision to operate, although these are not normally recorded. For this reason as well as in the interest of being fair to the doctors whose records are studied, the criteria which are established as sufficient or insufficient to justify surgery should err on the side of being generous to the doctor. This will increase the certainty that a diagnosis that is described as unsubstantiated or surgery as unjustified will in fact be so. On the other hand, when this logic system says that a diagnosis is justified or an operation indicated, this statement will be made with substantially less certainty. This is proper.

The large amount of work required to program surgical practice for a computer cannot be justified merely as a convenient research tool to be applied to a few hospitals. It is proposed to use this tool, which is now virtually complete, to first study an areawide sample of pelvic operations. This should help determine the extent of the two influences of hospital and of surgeon-training upon the performance of pelvic surgery. Later, this type of study programed for a computer may possibly be adapted to take over some of the functions of a tissue or record review committee in hospitals.

I hope now you will have questions so that Dr. Barsamian can at least illustrate how the system works.

DR. ERNEST M. BARSAMIAN:

First of all, let me say how happy I am to be here in a group quite different from my usual associations. However, I do not want to apologize for my presence here because I believe it is useful for people who work with patients to occasionally intermingle with a group such as yours, in order to expose you to their point of view.

The reason we went to all this trouble (and, believe me, it was a lot of trouble) is because we are convinced that no one individual or group of individuals can, by simply taking a chart and looking at it, evaluate the care as recorded in that chart as good or not good, and be repeatedly consistent in their judgment. Unless there is a method, employing a computer to make evaluation reproducible and to assure objectivity, questions will always arise about the validity of the answers.

Again, we think that a whole chart, which is really a composite of processes of medical care, cannot be graded unless it is dissected into its component parts with each part considered separately for study. This tedious method is essential if we want to be certain of the standard of medical care given by a specific doctor, hospital, or country.

Indices such as infant mortality and length of life certainly do not give us the whole picture of medical care. Our method provides more indices to complete the picture of evaluation of surgical care. Only after arriving at a standard of judgment which is reliable and uniformly applicable can we compare it with standards of other countries, or against what we think is the ideal. At the same time, by dividing this evaluation into 10 categories we can determine where the deficiencies in care lie. We have to know which link of the chain is weak in order to strengthen it.

Now, the other side of the coin, as Dr. Peterson mentioned, is the problem of policing the admission privileges which doctors have in hospitals. As you know, admission privileges are given out fairly generously in the United States as contrasted with the situation in Sweden, for example. Therefore, policing within United States hospitals must be very critical. Some of the present efforts in this direction, however, are not free from subjective bias. For example, a doctor who is a member of the tissue committee in a particular hospital could not help being biased in his medical judgment of a friend who is the responsible surgeon. On the other hand, a computer can evaluate the operative procedure much more objectively because essentially it is a force

*Dr. George V. S. Smith gave extensive help in the formulation of this portion of the study.

outside and apart from the hospital which makes the judgment.

The question also arises of comparing performances within a given hospital, for example, those of the trained with the nontrained surgeon. We want to know if surgery is done equally as well by the family doctor as by the fellow who has spent 4 years in surgery. We think not, but there is no conclusive evidence that this is so. We cannot prevent the family doctor from operating on a patient because we feel he will not do as good a job as a well-trained surgeon. However, if there is good evidence to show that only the well-trained surgeon should perform surgery, the public can be informed accordingly. We feel that our citizens should get the best medical care, and thus we must provide an answer to this that is both objective and highly accurate.

On the other hand, if we find that the trained surgeon is doing work at the level of the family doctor, then, of course, we will have to go back to the people who set up the standards of surgical training to find out what is wrong with our training programs.

There are many other questions, such as the influence of the medical school on the end product, the influence of the hospital training program, the influence of the student's family background, and his degree of intelligence, which can all be answered once objective judgment of the medical or surgical care record is achieved.

A form has been constructed for classification of doctors by specific criteria. By means of a simple checklist, doctors can be classified by such criteria as length of training, medical school attended, grades obtained, and type of hospital where training was obtained. All kinds of questions can be immediately answered by merely changing the classification at the top of the page, since the framework of evaluation of care remains the same.

If you are going to devote time and energy to doing all this work, it is important to follow through on the study. Of course, if you only plan to obtain the results for one or two hospitals, this would be a very good way to waste time. However, we planned this as a tool to be applied on a broader base than has been done heretofore.

Now, I think the best way to proceed from this point is to answer specific questions.

DISCUSSION

MR. MURRAY CLUTCH (California Medical Association):

Dr. Peterson mentioned there were significant differences in hospitals Nos. 1 and 2 but not in Nos. 3 and 4. Have you attempted any relationship in trying to determine the medical education, postgraduate training, the place of internship and residency in Nos. 3 and 4 as against Nos. 1 and 2? Have you established anything?

DR. ERNEST M. BARSAMIAN:

The results which we have had thus far were based on our previous method of subjective evaluation. This is not the way to do it. Therefore, we have sent all of our information to the computer and hope soon to have the complete results.

We have impressions about various things. We have records of the doctors' training, their background and so on. However, I think it best not to hazard a guess at the present time lest I give you impressions that the computer will not support.

MR. WALTER J. McNERNEY (Blue Cross Association, Chicago):

In this approach, what is the correlation to the activities of the Tissue Audit Committee?

DR. ERNEST M. BARSAMIAN:

The Tissue Committee performs one of the 10 processes which we have included here. However, we have tried to be much more definite in this than the Tissue Committee.

I am glad you brought up this question because I would like to illustrate it. In certain diseases a diagnosis may be made which indicates surgery; if the diagnosis is correct, it will agree with the pathology, and the committee will approve.

Let us take, for example, a diagnosis of gangrene of the bowel. This diagnosis by itself is an indication to operate. The diagnosis of appendicitis is likewise an indication for surgery. However, removal of the appendix, if it is later found to be normal, was based on an error made in rendering the diagnosis.

On the other hand, there are other diseases which cannot be judged in this way, that is, in

terms of diseased or nondiseased tissue. This was mentioned briefly by Dr. Peterson. For example, an individual may have a small cyst on the ovary, which occurs every month. Sometimes it may become a little larger and cause a bit of discomfort. If this is diagnosed as an ovarian cyst, this diagnosis is NOT an indication for surgery. If upon removal of the tissue, pathology such as a follicular cyst is shown, the Tissue Committee will say the surgery was justified. However, we say it is not, because indication for surgery is not based solely on palpation of an organ that is not perfect—you are not attempting to correct anatomy—you are attempting to keep a patient well. Therefore, the Tissue Committee does a fraction of what this study intends to do.

MR. E. G. JACO (School of Public Health, University of Minnesota):

Do you plan to use or correlate the type of surgical scores with other types of medical care in the hospital or police it in another way so that there is a correlation between surgical care and, say, medical or pediatric or obstetric or any other type of care also going on in the same hospital?

DR. BARSAMIAN:

At the present time we do not plan to do this because we feel we are busy enough attacking the problem of surgery. However, we hope that at a future date this particular problem will be tackled.

From the subjective evaluation of these hospitals, it appears that medical training is also related to such things as better nursing care, laboratory tests, etc. These are things we want to complete as a support or in addition to getting an overall look at the other departments. This would then pinpoint the hospital effects as well as the doctor effects.

MR. VERNON WECKWERTH (University of Minnesota):

In attempting to follow through on the notations you were using to find out this system, which apparently is a summary of scores, kind of matching the lower bounds of some kind in the computer, I was confused by the use of the plus sign. Can you explain this. There are two uses of the symbol "plus." One is to indicate the presence of a particular condition and, in lines 3 and 4, I don't know whether that means S_1+P_1 a comma in between. Can you explain that? cannot tell whether this is an equation or codi system.

DR. BARSAMIAN:

The symptom "plus" stands for "anc You need both symptoms and a physical examin tion to justify the diagnosis. If the symptoms a present and the physical examination shows sor pathology, then both the symptoms and the p thology should justify that diagnosis.

The symbol S_1 indicates the symptoms th are necessary for making the diagnosis and the are not necessarily the same as the symptor necessary to justify surgery.

MR. VERNON WECKWERTH:

You have a letter "a" which I do not unde stand.

DR. BARSAMIAN:

That was supposed to be a capital "A which means that all the patients should be und age 30.

MR. VERNON WECKWERTH:

Therefore, these are not equations, they a definitional categories—that the presence of is equal to the presence of S_1 plus the fact that t person is under 30 years of age?

DR. BARSAMIAN:

We are defining S_1 here as S_1 which is o of those four in the parentheses here, plus the fa that the patient is under age 30. If the patient over age 30, then she would not be placed in th diagnosis. However, the two are necessary. suppose the recording of both of these as S_1 confusing. The idea, however, is that this is equation. It indicates that an age of less than plus one of these symptoms are necessary to ma the symptom S_1 a symptom that justifies t diagnosis.

MR. VERNON WECKWERTH:

On the left hand side, the plus mea "present" and on the right side it means "and," that right?

DR. BARSAMIAN:

That is right.

At the same time, S_1 is really S_1 plus the duration of 4 years for those three symptoms and 2 years for the indication of sterility. This just reflects my ignorance in the use of these symptoms. Being a clinician, however, I should have probably used something else and avoided this confusion.

DR. PETERSON:

That point is well taken. I did not see the slide but thank you very much

THE CHAIRMAN:

Are there other questions?

MR. WECKWERTH:

One other question—is the assumption made that the pathologist is correct? It appears that the justification or final decision that you are making is that the clinician is wrong if the pathologist does not agree with him. Is that correct?

DR. BARSAMIAN:

No, we did not mean to convey that impression. I think the pathologist is right when he says after looking at the uterus and finding a fibroid, that there is a fibroid However, the pathologist certainly does not know whether or not surgery was indicated. This is why we do not think that the Tissue Committee alone is capable of answering the questions we have. We must go back to the process of workup indicating surgery. This does not relate to what the pathologist finds because we can sometimes agree that workup indicates surgery on the basis of what we know and teach, but the pathologist may not come up with what we expect him to. We are attempting to follow the thoughts of the surgeon from the moment the patient is admitted to the time he is discharged from the hospital. These things cannot be looked at retrogressively because this will always make them easier.

MR. BERNARD KRAMER (Tufts University, Boston):

Then what you have developed here is a style of thinking and a style in relation to a style of practice. However, what I would like to know is whether and to what extent this style of thinking indicated by these 10 points is consistent with the training and education that people undergo. My opinion is that you are asking that people perform in a certain way, which is consistent with a standard that you have set up. Would you expect that some of the differences between performance and those proposed standards are attributable to some inadequacy in the teaching and training for these standards? If, for example, you had two experimental groups, one which has learned this style of thinking and one which has not, would you expect to get differences in actual performance?

DR. BARSAMIAN:

I think I can answer all of that. I happen to teach students the techniques of history taking and physical diagnosis. The standards we have set up for this study are far below those which I use in grading my second-year students in physical diagnosis. We think this is only fair because parts of the examination or findings might be omitted from the patient's record. Aside from this there are other difficulties in judging records. Our impression has been, of course, that important findings are seldom omitted from the record. If anything, however, doctors tend to exaggerate the symptoms and the physical findings.

For example, the recording of a uterus as "slightly enlarged on pelvic examination" generally means that the uterus is normal. We have found this to be consistently true. Further, "excessive bleeding" usually means some bleeding. This is determined by later checking the hemoglobin. Therefore, these tabulations can be made in any way desired, and, as you said, the standards are only as good as the people who make them. However, the advantage is that they apply to everyone and are reasonable, because we did not attempt to have them include anything that could be regarded as controversial. There are lots of things in medicine upon which two people will not agree. There are certain things, however, upon which all people will agree and a few other things upon which more than 95 percent of the people agree. This is what we have attempted to adhere to. Since our standards exclude controversial points, if they are cut down any further, some of their essence will be lost.

Everybody will agree, for example, that a pregnant uterus is not a uterus that should be re-

moved by surgery. Everyone agrees that a polyp found in the cervix should be removed without opening the abdomen and excising the uterus as well.

On the other hand, there are certain things about which people will both agree and disagree. We will bend over backwards to let the doctor be considered right and be given the benefit of the doubt. Therefore, this technique attempts to avoid these discrepancies which can arise by variation in standards.

DR. PETERSON:

There is another aspect to your question, a way of thinking or reasoning about surgery. This is not the way that this subject is taught at all. Indeed, if you examine the standard textbooks that cover this field, I don't think that you can, from them, deduce the theory of what is going on in this disease. Textbooks have nothing or very little to do with functions. It is almost impossible to find out how to think about this problem from the textbook.

MR. RODNEY COE: (Medical Care Research Center, St. Louis):

You were mentioning cysts. A surgeon feels the cyst, and then he gets in there and he finds something. Suppose it is one type of cyst, it would then be worthwhile taking it out. Therefore, how can you determine on that basis whether the surgeon has to make his decision by not knowing what kind of cyst it is?

DR. BARSAMIAN:

As we have made a separate schedule for every particular disease involved in pelvic surgery, we have also worked out one in connection with the various cysts. We have done this after consultation with the Professor of Gynecology at Harvard, Dr. George Smith; Dr. Duncan Reid who is the Chief at Boston Lying-in Hospital, as well as with other members of the staff of other medical schools in Boston. The consensus is that a cyst of more than 5 cm. in diameter should be deemed suspicious. Cysts less than that size are rarely cancerous. Further, age makes a difference. Most of the malignant cysts occur after age 30, and suspicion of malignancy is not a factor in a patient under 30. The nodularity and tenderness of the cyst must also be considered.

Now, a simple cyst, if it produces discomfort or pain, will usually not last more than a couple of months, nor will the disturbance in menstrual bleeding which it will cause. Therefore, the discovery of a cyst that is 2 cm. in diameter, not tender, not nodular, or not in the suspicious group, is not an indication for surgery. The cyst will usually disappear without treatment. The patient should again be examined after a period of at least 2 to 3 weeks, and if it has not regressed by this time the woman may be subjected to surgery.

As I say, this has all been delineated on paper. I will be glad to show you some of the lists if you are interested.

DR. B. C. PAYNE (University of Michigan):

Most of the questions I had have already been answered. I was going to ask who developed the criteria, and I believe you answered that. Also, do you think that "schedules" for diagnoses other than uterine myoma, and now ovarian cysts, can be developed for other diseases, other than surgical diseases particularly and, finally, does any of this apply to length of stay evaluation?

DR. BARSAMIAN:

We have developed lists for things such as dysfunction, uterine bleeding, cervical polyp, retroversions, so-called adhesions—we have a long list covering everything except cancer, and we intentionally avoided this.

The reason for staying away from cancer is that our only source of material for this is the operating-room book. We therefore cannot decide what surgery was not done that should have been done. From the operating-room record, we do not know which patients needed surgery and did not have it.

Now, this is not a limitation to the study because sources of reference can be changed. Record-room rather than operating-room charts can be used first. However, there are still problems of controversy in the treatment of pelvic cancer, X-ray, surgery, etc. Thus, we have shied away from that and have attempted to include all other pelvic diseases.

Now, as to length of stay. This is something that we can compare later through use of the computer.

DR. PETERSON:

I would like to say that Dr. Burgess who is here in the audience, got a somewhat similar logic system for diagnoses of anemias. This, however, does not turn out to be terribly useful because there are not enough discrete anemics to make a very valuable study. However, if you are interested, I suggest you talk to him.

THE CHAIRMAN:

Thank you very much, Dr. Peterson and Dr. Barsamian for reporting on a major venture in looking at the quality of medical care and its relationship to use. I think we will run into other ventures that go deeply into the medical side in several of the other studies.

Our next presentation will be by Odin Anderson and Paul Sheatsley. They will report on a survey of patient and admitting physician opinions of a sample of hospital admissions in Massachusetts. This is a study in which some of us have been involved for an extensive period of time. We hope it will be of interest to you as will also be the study methods used.

Odin Anderson has been Director of Research of the Health Information Foundation for some 10 years. I have had the pleasure of working with him for the last eight. He took his public health work at the University of Michigan and is known to many of you.

Paul Sheatsley is the Director of the New York Office of the National Opinion Research Center of the University of Chicago, and we have likewise worked with him for many years. Many of the studies in which this foundation has been involved have been joint studies with the National Opinion Research Center and with Odin.

Now, Odin, do you want to take the microphone?

A Survey of Hospitalized Patients and Their Doctors

DR. ODIN W. ANDERSON:

While the Health Information Foundation was still in New York, prior to its move to the University of Chicago, we felt that some contribution could be made to the formulation of policy in the hospital and medical care field by a survey of hospital discharges in an area which has a well-developed hospital and medical establishment, rural and urban conditions, a range of occupations, and similar factors present in most areas of the United States today. Through a fortunate combination of circumstances—mostly because of the willingness and cooperativeness of the Massachusetts Medical Association, the Massachusetts Dental Association, the Massachusetts Hospital Association, and the Blue Cross and Blue Shield Plans—a survey of a representative sample of discharges from a representative sample of 50 general and special short-stay hospitals in the State of Massachusetts was started in 1960, and the field work continued into 1961. Because we felt that admissions of maternity patients to hospital were not at issue, we limited our survey to surgical and medical cases where the greatest possibility for discretion as to admission and discharge would be present. The hospital cases were drawn from the 50 hospitals over a 12-month period, to remove any seasonal variations in admission.

Each hospital was visited twice, at 6-month intervals, and a random sample of patients selected from the discharge sheets of the preceding calendar month. Patients were interviewed in their homes within a few weeks after discharge. Patients 18 years of age and over were interviewed personally, and for those under 18 an adult member of the household was interviewed on their behalf, usually the mother. In those cases where the patient was deceased, the closest responsible relative was interviewed. The patients were asked to name attending and referring physicians, and these two physicians, if they were not the same individual, were interviewed as well. A total of 2,355 cases were drawn from the hospital discharge records of which 2,046, or 87 percent, were interviewed. Close to 50 percent of the interviews were in the Boston Metropolitan Area. Forty-six percent of the interviews were in towns of 50,000 and over, 25 percent in towns of 100,000 and over, and 11 percent in towns under 2,500.

The patients and physicians were asked a detailed set of questions which would recreate the chain of events and decisions that led to the admission and discharge. We know, for example, when the patient first became aware of the illness which

eventually resulted in hospitalization. We know when the patient sought medical care after recognition of the illness, when the doctor recommended hospitalization after he had seen the patient, and the date of admission. We have detailed information on source of payment for hospital care, home circumstances, the type of practice of the doctors involved, family income, occupation and so on. A few of the preliminary data will be presented today as a preview of much more to come. They will be limited to data from patients and to the period before and at admission.

Profile of Admissions

The annual admission rate per 1,000 population in Massachusetts ending in May 1961, exclusive of admissions for maternity, was 116. If maternity cases were added, the admission rate would be in the neighborhood of 145. Massachusetts is then among the States with relatively high admission rates.

Massachusetts also has one of the highest proportions of the population covered by hospital insurance of any State in the Union, approximately 80 percent. The national average is now a little over 70 percent. Although no data by insurance coverage will be presented here, it is well to know that a very high proportion of hospital patients have all or part of their charges paid by insurance.

By type of admission there were: Surgical, 55 percent; medical, 42 percent; and other, 3 percent.

By type of accommodation there were: Private, 18 percent; semi-private, 43 percent; and ward, 39 percent.

By length of stay 10 percent were one day or less, 2 percent the same day, and 10 percent 22 days or longer. Five percent of the patients stayed 31 days or longer.

The length of stay by type of accommodation is of interest because of the differentials in per-diem charges:

	Percent with length of stay of 22 days or longer
Private	8
Semi-private	9
Ward	11

The distribution by time of day of admis sion has not been obtained before to our knowledg and gives some indication of the around-the-cloc activity of the general hospital as far as externa demands made on it are concerned.

- 75 percent of the admissions took plac between 9 a.m. and 6 p.m.
- 8 percent of the patients were admitte between 9 p.m. and 6 a.m.; 3 percent fro midnight to 6 a.m.
- 16 percent were admitted during the 12 hour period from 9 p.m. to 9 a.m.

(Remember that these figures exclud maternity patients who have a habit of bein admitted to hospital at odd hours.)

In other words, projecting the 3 percen admitted between midnight and 6 a.m. to al admissions in the State approximately 18,00 nonobstetrical patients were admitted to hospital during that period of the 24 hours of the day.

Hospital discharges are more concentrate in a shorter time span than admissions. Ninety one percent were discharged between 9 a.m. an 6 p.m. and 85 percent from 9 a.m. to 3 p.m. Thre percent were discharged between 9 p.m. and a.m.—a seemingly odd hour to go home.

The days of admission and discharge ar of interest to hospital administration, to indicat the distribution of patient-load during the week How closely do admissions and discharges cor respond to the 5-day work week? The answer i "somewhat." There were more admissions o Monday than on any other day; fewer admission on Friday and Saturday, rising again on Sunday In fact, the percentage of patients admitted o Sunday is the same as the percentage admitted o Wednesday..

Naturally, the proportion of patients dis charged by each day of the week was the obvers of the admission pattern by day of the week. Pa tients were more likely to be discharged on Satu day and least likely on Monday.

Assuming the mean proportion of admis sions each day of the week as 14 (7÷100=14.3) the range was from 18 for Monday to 8 for Satu day. Assuming a similar mean proportion fo discharges, the range was from 9 for Monday t 20 for Saturday. For those who would like to se each day of the week the same as the average fo the week these data show the bulges.

Reasons for Admissions

Among the total number of admissions (N=2,046), 89 percent were due to illnesses and 11 percent to accidents. Among the accidents (N=219):

	Percent
Motor vehicle accounted for	25
At work	18
Home	29
Other	28

Same-day emergency admissions, including accidents, accounted for 32 percent of all admissions (N=661). It is thus seen that one-third of the admissions (excluding maternity care) require round-the-clock standby facilities and personnel, i.e. handling of crises routinely. If we wish to add maternity care to the total of admissions, about 45 percent of all admissions are then on a standby basis.

The one-third of all admissions which had been admitted as emergencies were first examined by a physician at the following places:

	Percent
Office	16
Home	33
Hospital	48
Other	3

Among the emergency admissions examined at the hospital (N=318):

12 percent were seen at the clinic
65 percent in the emergency department
23 percent after admission to a bed

Returning to the total number of admissions (N=2,046), the main reasons for hospitalization, as given by the patient, were:

	Percent
Operation	44
Treatment	27
Tests or X-ray	25
Others	2
Unknown	2

The 25 percent who were admitted for tests or X-ray must be examined carefully. This was reported by the patient, and it is difficult to know whether or not the patient could differentiate between an admission for treatment, i.e., nonsurgical, or for diagnosis.

Patients' Feelings and Attitudes

The last section of this presentation will deal with the patient's feelings and attitudes regarding his illness and going to the hospital, adding an important human dimension to the objective situation described in the foregoing.

Patients were asked (or on their behalf): "Back when you had the first signs of the illness which led to hospitalization, did you see the doctor right away or wait awhile?" (N=1,777, excluding same-day hospitalizations):

	Percent
Right away	47
Waited awhile	49
Don't know	2
Signs discovered by doctor	2

Patients who waited awhile were asked why they did so instead of seeing the doctor right away:

	Percent	
Financial	3	
Too busy	4	
No doctor readily available	4	
Thought it would go away	44	79
Did not think important	35	
Fear	4	
Doctor could not help	1	
Distrusts doctors	3	
Miscellaneous	4	
Don't know	4	
Total (because of some overlapping)	106	

Of those who delayed seeing a physician, almost 80 percent gave as their reason that they did not believe their illness was serious enough, and only 3 percent of the patients mentioned financial reasons.

To get some idea of the role of pain and discomfort in motivating people to see a doctor, the patients were asked (excluding those who were admitted as emergencies): "How much pain and

discomfort did you have just before you saw the doctor?" (N=1,388):

	Percent
A great deal	26
Quite a bit	27
A little	22
None	24
Don't know	1

Fifty-three percent, then, had an appreciable amount of pain, and 46 percent little or none. We do not know how to interpret this gross threshold of pain before seeing a doctor, but it does seem to us that immediate pain is only one of the elements that is important in taking the patient to the doctor. There may have been pain in the past, but only one-half of the patients experienced immediate pain.

Further, in addition to the question on pain and discomfort the patient was asked: "Before you talked with the doctor, how serious did you think your condition was?" (N=1,385, excluding same-day admissions):

	Percent
Very serious	19
Somewhat serious	32
Not really serious	42
Don't know	7

Again over 40 percent of the patients saw a doctor although they did not believe their condition was serious, but it ultimately resulted in hospitalization.

Continuing the same line of questioning, the patients were asked: "Were you able to keep up your usual activities at that time, or did you have to cut down on some things, or were you sick in bed?" (N=1,385, excluding same-day admissions):

	Percent
Could keep up activities	44
Cut down some	35
Sick in bed	21

In other words, 44 percent could keep up their usual activities, but 56 percent were disabled, among whom 21 percent of the total patients were already sick in bed at the time they first saw their doctors.

The patient was asked how strongly the doctor felt about the need for referral to hospital at the time he first recommended it—"Did l feel it was absolutely necessary for you to go int the hospital, or did he think you would be muc better off, or did he just feel it might be a goo idea?" (N=2,046).

	Percen
Absolutely necessary	7
Much better off	1
Might be a good idea	
Don't know	

The patient's perception of the degree c necessity expressed by the physician indicates tha in close to 80 percent of the admissions the docto felt a sense of absolute necessity. In only 5 pe cent of the instances was the doctor perceived t feel that hospitalization might simply be a goo idea. This percentage of 5 is the area of absolut discretion, and the percentage of 14 expresses par tial discretion, a combination of 19 percent (2 per cent did not know).

Another question asked of the patient dealt with the doctor's sense of urgency as to hov soon the patient should be sent to the hospita "and how urgent did the doctor say it was? Tha is, did he want you to go into the hospital righ away, or did he say you could put it off for a fe weeks or months, or did he just say you ought t go into the hospital eventually?" (N=2,046):

	Percen
Right away	7
Few weeks or months	1
Eventually	
Don't know	

It is evident that for 21 percent of th patients the doctor felt that hospitalization coul wait although it should take place eventually.

The patients were asked "How did yo yourself feel about being sent to the hospital? (N=1,958, excluding unconscious or "too sick t care" (4 percent) patients).

	Percen
Glad	3
Willing	5
Somewhat against	
Definitely opposed	
Don't know	

Ninety-three percent of the patients say they complied with the doctor's recommendation

gladly or willingly, 4 percent were somewhat resistant and went anyway, and only 2 percent were definitely opposed but still went.

To get some idea about the relative importance of cost of hospital and physicians' services for patients when the doctor said that they should be sent to the hospital they were asked: "How much did you worry about the cost of the hospital (or doctor) at the time?" (N=1,989):

	Percent	
	Hospital	*Doctor*
Great deal	12	8
A little	17	16
Not at all	70	75
Don't know	1	1

A minority worried about costs and the proportions were roughly the same for both hospital and physicians' costs.

How did the patients themselves perceive their need for hospitalization? Patients who were sent into the hospital for an operation were asked: "Was there any doubt in your mind that you should have this operation, or did it seem to you to be absolutely necessary?" N=920):

	Percent
Some doubt	5
Absolutely necessary	94
Don't know	1

It would seem that the physician meets little resistance in recommending operations with only 5 percent doubting, but entering the hospital anyway. In this connection, however, it must be recalled that this figure excludes patients who resisted and did not enter the hospital at all. The 94 percent who felt the operation was "absolutely necessary" were asked why they thought so. (N=833):

	Percent
To save life	3
Prevent more serious trouble	16
Find out what is wrong	3
Relieve, correct condition	64
Doctor said so	13
Miscellaneous	--
Don't know	1

It is of interest to learn that although not specifically asked, only 3 percent of those who thought the operation was necessary volunteered the opinion that their lives were being saved, and that 80 percent felt that the operation would prevent more serious trouble in the future or relieve or correct the condition. Sixty-four percent believed that the operation was to relieve or correct the condition. We believe that it is of significance to learn that 80 percent of those who were admitted for surgery felt it was "absolutely necessary" to have the operation even though the operation was not immediately life-saving. It is still within living memory when operations were regarded largely as a life-saving procedure.

The patients who said they were admitted for operations were asked: "Was this the kind of operation which might have been done in a doctor's office or clinic, or was it absolutely necessary that they do it in the hospital?" (N=920):

	Percent
Might have been in office or clinic	6
Hospital absolutely necessary	91
Don't know	3

How about treatment without operation, could the patient have been treated outside the hospital? (N=513):

	Percent
Could have been treated outside	8
Hospital absolutely necessary	86
Don't know	6

Finally, the patients who believed they were hospitalized for tests or X-rays were asked if they felt such tests and X-rays could have been done outside the hospital? (N=487):

	Percent
Could have been done outside	7
Hospital absolutely necessary	84
Don't know	9

This aspect of hospitalization needs more detailed examination by comparison with the physicians' responses. It also raises questions, of course, of the functions of the modern hospital.

Observations and Implications

What can be made of these data regarding hospital use today and regarding the allegations of an appreciable amount of unnecessary use? It is difficult to determine how much use may be un-

necessary without any hard criteria—criteria which would still have to be quite arbitrary at best. It seems reasonable to assume in several places in this paper that there may be room to cut back hospital admissions without presumably seriously jeopardizing the health of the patient. Since we do not know how to measure the impact of hospitalization on the health of the patient, we then have to rely on a combination of professional judgments, desires, and perceived needs, assuming conscientiousness and good faith, and on the judgments, desires, and perceived needs of the patient, the ultimate criteria in any case. It is apparent that according to patients' reports there was a gray area of 10 to 20 percent, depending on the circumstances inquired into, where decisions could have gone either way, i.e. in-hospital or out-of-hospital treatment. Presumably, if there were some way to screen out this gray area of admissions, it could not be proven that the public would be any worse off because of lack of hard criteria, but money would be saved. It depends to what extent we wish to have a safety factor. The questions must then be asked, what administrative machinery would be necessary to screen out this gray area, and how would it affect basic professional prerogatives and patients' perceptions of need and convenience.

If we accepted the hard core expression of opinion of how patients perceived the doctors' sense of necessity, we could eliminate about 20 percent of the admissions, since in about 80 percent of the admissions the doctor felt the admission was "absolutely necessary." Perhaps this judgment can be questioned, too, because we might establish an admission policy whereby only acute, emergency conditions would be admitted. In this study such conditions represented one-third of the admissions, adding obstetrics 45 percent of the admissions. We should, however, examine more closely the 20 percent of the admissions which from the patient's report of the doctor's judgment were not "absolutely necessary."

An overall and final observation is that neither doctors nor their patients are really pushing hard at the door of the hospital. We make this observation because after hospital care was indicated, over 20 percent of the patients said that their doctors felt that hospitalization could be delayed for several weeks, months, or longer. Further, one-half of the patients delayed seeing a doctor after the recognition of symptoms. If either the doctor or the patients were not relatively conservative regarding the use of hospitals, the pressure on hospitals would be much greater than it is now. Then also we made no attempt by surveying the general population to measure the extent to which hospital care was recommended but never received. Other studies have shown that this group is not small.

All we have said does not, of course, preclude setting up new forms of hospital and medical organizations. The main public policy decision must be whether present hospital resources are used wastefully and whether controls at various checkpoints should be established which do not now exist. Undoubtedly, the use of hospitals can be reduced, whether or not they should be, however, is a profound problem of public policy.

THE CHAIRMAN:

Paul, would you like to step to the microphone and let us have your discussion?

MR. PAUL SHEATSLEY:

Odin alluded to the fact that we interviewed doctors on this survey as well as the patients. The doctor interviews, some 2,000 of them, have been coded and are now being put on IBM cards. Unfortunately, we do not yet have the results; however, George Bugbee thought there might be some interest among this audience in the way in which we went about obtaining interviews with doctors, the methodology we used and, therefore, I thought I might briefly describe that and present a few findings.

The doctors we interviewed were determined on the basis of patients' answers to two questions: First, who was the doctor who first told the patient that he needed hospital care; second, who was the doctor mainly in charge of the patient's care while he was in the hospital? The "recommending doctor" was the one who had referred the patient to the hospital and the "attending physician" was the one who had attended the patient in the hospital.

We wanted to talk to the recommending doctor because presumably he was most familiar with the patient's home background and the reasons for hospitalization.

We wanted to interview the attending physician because he was mainly responsible for the patient's care while hospitalized and presumably determined the patient's length of stay.

In two out of three cases the recommending doctor and the attending doctor were the same individual. If the patient did not know the attending physician's name, we got a description, if possible, and then wrote to the hospital librarian with whom we had already established contact. Some of these descriptions were vague, such as the "intern on duty in the emergency room at a particular time of day," or "a short man with red hair."

In the course of the Massachusetts study over a 12-month period, we interviewed 2,046 patients and, as Odin mentioned, we had an 87 percent completion rate of the 2,350 or so who were drawn from the sample. The interviewed patients named 2,681 doctors as their recommending or attending physician. These were the ones we attempted to interview. These 2,681 doctors named were not different individuals since, in many cases, the same doctor attended more than one of the patients who fell into our sample. This, of course, was due to the clustering of the sample that we had to employ. In a certain hospital, for example, one surgeon might do all the T and A's and we might draw as many as five or six of his patients.

Of the 2,681 doctors named, we completed interviews with 2,137 or 80 percent. The 20 percent we did not complete were for the following reasons:

In 101 cases, or 4 percent, the patient objected to our approaching the doctor. We respected his wishes and never made any contact with the physician.

In 217 cases, or 8 percent, the doctor refused or could never find the time to be interviewed.

In 3 percent of the cases the doctor had moved out of the area.

In 2 percent of the cases the doctor was unknown—we were simply unable to identify him.

In 1 percent of the cases the doctor denied that he recommended the hospitalization or that he had been the attending physician. There was a discrepancy between the patient and doctor reports, which we could not reconcile.

And in another 1 percent of the cases, the doctor did not remember the patient or had no access to records and could not answer our questions.

I think this is a fairly remarkable record.

We hear a great deal about how difficult it is to interview doctors. I attribute our success in completing the interview with four out of five of the assigned cases, first, to the auspices which we had in Massachusetts. Odin mentioned the cooperation of Blue Cross-Blue Shield, the State Hospital Association, the State Medical Society, and the State Dental Society.

In the course of designing the study and of preparing our questionnaires and other materials, we worked quite closely with a small liaison committee which was set up, a very prestigious liaison committee, composed of the current president, the past president, and the executive secretary of the Massachusetts Hospital Association and of the Massachusetts Medical Society. These gentlemen were kept informed of our decisions and our problems—they offered advice and they had an opportunity to look over our materials before they were finally approved. The secretary of the Medical Society in particular was extremely helpful.

Two notices were placed in the New England Journal of Medicine with respect to the purposes of our survey and its auspices.

At the beginning of the survey, the State Medical Society sent letters to each of the district societies requesting that their membership be advised of the study. When we were ready to start interviewing doctors, the Medical Society sent out a mass mailing to all 6,000 physicians on their roster, again advising them that we were in the field, that one or more of their patients might have been interviewed, and that we might come to interview them.

Similarly, at the hospitals, we talked with the administrator in each sample hospital and he often discussed the study with his medical staff and encouraged them to offer us their cooperation.

Finally, before we attempted to interview the doctor, there was a letter from the National Opinion Research Center on our letterhead which enclosed the Medical Society letter, advising the doctor of the name or names of patients in our sample and announcing that an interviewer would soon be calling to ask him about these cases.

In addition to these auspices, I think our care and skill in conducting the interviews were chiefly responsible for the success we had.

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Only 4 percent indicated they would, so we respected their wishes.

We concealed nothing from the doctors. We told them how the patients' names had fallen into our sample; told them all about the background of the study, its purposes and methods, and answered all their questions. This too, I think, was helpful in obtaining their cooperation.

Our interviewers were alert, intelligent, resourceful women who had been extensively trained for this study. They were highly motivated and, above all, persistent. We gave the doctor all the time he needed. If the doctor was unable to give us an immediate appointment, we called every few weeks or wrote him a second letter, and we persistently followed up all refusals. We wrote personal letters to the refusers, answering their particular objections, and in a number of cases, we persuaded them by means of long distance telephone calls. I think all of this impressed the physicians with the importance of the survey and contributed to the results.

Either Odin or I will be happy to answer any further questions about the methodology of the survey.

DISCUSSION

MR. RAY H. ELLING (Cornell University, New York):

This time study is very important to us. I wonder whether one doesn't learn a great deal more about users of hospitals by studying both users and non-users and whether it would not be better as an approach in the future to start with cohorts of population, studying both the people who go in and who do not, and get attitudes and the like.

DR. ANDERSON:

It's the old story of how much do you bite off at once. We considered this and then our circumstances changed. We felt that perhaps our financial circumstances would change and, as a result, we limited the study to the hospitalized population. We figured if we could study them in great detail, that we would know a great deal more than we did before.

Of course, I would love to study the population which was not hospitalized but which was recommended for hospitalization. Maybe you can do that at Cornell.

MR. ROY PENCHANSKY (Harvard University):

I would like to say that I have some reservations with respect to opinion samples in this type of area.

For example, if in evaluating your data you consider that one-third of your people had symptoms over a year old before they saw a doctor—this means that many of these people are remembering back, their recall is over a period of a year-and-a-half. Additionally, they had intervening experiences of doctors' visits and hospitalization.

I believe you also asked the doctors how important the hospitalization was, after they had already made a decision to hospitalize these people. Are you really going to assume that they are going to say it was not important and not necessary, especially after they put them into the hospital?

Therefore, I personally do not give much credence to this type of study, but maybe you can explain to me how you evaluate these things, and possibly I may be able to see use for the data.

MR. SHEATSLEY:

I think we can place considerable trust in these reports, more than perhaps might seem evident. Remember, these hospitalizations were drawn from discharge records during the preceding calendar month and in most cases the interview was completed within a month or at least two months after the patient was discharged. Consequently, the hospitalization and the things that led up to it were fairly fresh in their minds.

In one long-term illness case, the first signs of illness appeared in 1894. We obviously were not interested in a detailed medical history of the person's condition throughout all those years. In the case of these long-term illnesses, we established what we called a starting date for the present episode which, in most cases, was the date of onset of the most recent trouble which resulted in the particular hospitalization we were concerned with. Or, if there was no onset of recent trouble, as in the case of a long-standing hernia or something of that kind, the starting date was the date the patient "decided to do something about it." In such long-term cases, we skipped over very superficially the earlier history. In effect, about all we did was count the number of hospitalizations that intervened before this one. Our main concern was the events which led to this current hospitalization

In two out of three cases the recommending doctor and the attending doctor were the same individual. If the patient did not know the attending physician's name, we got a description, if possible, and then wrote to the hospital librarian with whom we had already established contact. Some of these descriptions were vague, such as the "intern on duty in the emergency room at a particular time of day," or "a short man with red hair."

In the course of the Massachusetts study over a 12-month period, we interviewed 2,046 patients and, as Odin mentioned, we had an 87 percent completion rate of the 2,350 or so who were drawn from the sample. The interviewed patients named 2,681 doctors as their recommending or attending physician. These were the ones we attempted to interview. These 2,681 doctors named were not different individuals since, in many cases, the same doctor attended more than one of the patients who fell into our sample. This, of course, was due to the clustering of the sample that we had to employ. In a certain hospital, for example, one surgeon might do all the T and A's and we might draw as many as five or six of his patients.

Of the 2,681 doctors named, we completed interviews with 2,137 or 80 percent. The 20 percent we did not complete were for the following reasons:

In 101 cases, or 4 percent, the patient objected to our approaching the doctor. We respected his wishes and never made any contact with the physician.

In 217 cases, or 8 percent, the doctor refused or could never find the time to be interviewed.

In 3 percent of the cases the doctor had moved out of the area.

In 2 percent of the cases the doctor was unknown—we were simply unable to identify him.

In 1 percent of the cases the doctor denied that he recommended the hospitalization or that he had been the attending physician. There was a discrepancy between the patient and doctor reports, which we could not reconcile.

And in another 1 percent of the cases, the doctor did not remember the patient or had no access to records and could not answer our questions.

I think this is a fairly remarkable record.

We hear a great deal about how difficult it is to interview doctors. I attribute our success in completing the interview with four out of five of the assigned cases, first, to the auspices which we had in Massachusetts. Odin mentioned the cooperation of Blue Cross-Blue Shield, the State Hospital Association, the State Medical Society, and the State Dental Society.

In the course of designing the study and of preparing our questionnaires and other materials, we worked quite closely with a small liaison committee which was set up, a very prestigious liaison committee, composed of the current president, the past president, and the executive secretary of the Massachusetts Hospital Association and of the Massachusetts Medical Society. These gentlemen were kept informed of our decisions and our problems—they offered advice and they had an opportunity to look over our materials before they were finally approved. The secretary of the Medical Society in particular was extremely helpful.

Two notices were placed in the New England Journal of Medicine with respect to the purposes of our survey and its auspices.

At the beginning of the survey, the State Medical Society sent letters to each of the district societies requesting that their membership be advised of the study. When we were ready to start interviewing doctors, the Medical Society sent out a mass mailing to all 6,000 physicians on their roster, again advising them that we were in the field, that one or more of their patients might have been interviewed, and that we might come to interview them.

Similarly, at the hospitals, we talked with the administrator in each sample hospital and he often discussed the study with his medical staff and encouraged them to offer us their cooperation.

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which, as I say, was a much more recent thing and therefore quite fresh in the person's mind.

Further, of course, the patient's report is only one of the kinds of data that we are using in our analysis. We also have the interviews with the doctors, who referred to their records while they were answering the questions, and we do have the hospital records too, of course.

MR. T. WOOLSEY (National Health Survey Division, Public Health Service, Washington, D.C.)

I would like to hear again a figure that I thought I heard near the beginning of Dr. Anderson's paper and, if I heard it correctly, I am very much interested in it and I think there might be some discussion on it.

The figure I thought I heard was that 10 percent of the patients had been admitted as inpatients and discharged on the same day without spending a night in the hospital. I would like to know whether this is common and, if so, what is the relationship in the factor of having health insurance, and further, isn't this of some concern to people who are talking and discussing problems relative to the use of hospital care?

DR. ANDERSON: You have heard correctly.

MR. WOOLSEY:

How many of them were deaths? That perhaps would be a limiting factor. I might say that we have been looking for a figure on this particular thing and that we did get one from the insurance experience. However, it was a good deal smaller than that.

DR. ANDERSON:

You were confused by the 10 percent figure. It was 10 percent one day or less, but the same day 2 percent.

MR. WOOLSEY:

You do not have an analysis by diagnosis or type of treatment? However, wasn't there, you think, some tonsillectomies in there, as well as dental care?

MR. SHEATSLEY:

Yes.

MR. WOOLSEY:

However, the 2 percent is much closer to the figure I heard about.

DR. MARK S. BLUMBERG (Stanford Research Institute, California):

In connection with one of the points just made, I would like to say that it is an interesting thing in hospital accounting of patients these days, that the so-called in-and-out cases are counted as one patient day. Also, if you come in one day and go home the next day, this is also counted as one patient day. Therefore, in services with a lot of tonsillectomies or fracture settings or other things where they do not spend the night, you can get into material errors.

I would also like to make one other comment about your general population, in the fact that you omitted obstetrics. Possibly you didn't think there would be as many vagaries in that.

I would like to point out that there are quite a lot of false labors coming in and maybe this may be something quite good to study because almost all of them are delivered in hospitals. On the other hand, you could judge a doctor's quality of performance by how many false labors he admitted. We found upwards of, in some cases, 10 percent false labors in communities where you have a lot of primipara—a woman having her first baby. This was not in a rural area—it was in an urbanized area. I think it is a big waste of time.

Further, you can also get confused because a lot of false labors come in and somebody is embarrassed and really induces them and so they go home with babies. However, they were really false labors when they first came in.

DR. ANDERSON:

I would agree with you on that. Again, when we thought about this project, we likewise had to think about what sort of things we wanted answered. Of course, our immediate question was—are hospitals used unnecessarily? Since by definition (even with the 10 percent you talk about) obstetrical cases should be in the hospital, we were greatly relieved to be able to eliminate 20 percent of admissions because we still had 80 percent left to study. This is the rationale we used toward excluding obstetrical cases. Therefore, I wish that somebody else would take over

from here and go into the general population relating to obstetrics, etc.

THE CHAIRMAN:

In simple words, financial expediency I expect limited it.

MR. WECKWERTH (University of Minnesota):

For your information, during this past summer, we did a survey of the Twin City hospitals, in metropolitan Minneapolis and St. Paul suburban areas, in which we got information from every hospital in the Twin Cities. We went into the records and found the kind of information you have.

In connection with every hospital, we have a distribution as to length of stay based upon the day in which they came in. We found out the average length of stay and admission on Monday was no greater than on Tuesday. We also have statistics with respect to the day they were admitted, the day they were discharged, and also information on all of the things you checked with respect to length of stay—the ins and outs, the one days.

We also found out that certain hospitals count to the nearest third, to the nearest half, or the nearest two-thirds of a day, depending on the length of stay. Therefore, we tried to clear up this discrete problem of single days of stay at the low end of the distribution. We have the total bill the patient was charged and we also have the distribution. At the present time, we are fitting together models to try to predict distribution for all Twin City admissions to the population of the metropolitan area, determining the relationship for age and probability of admission. This is linear and not exponential. The rate of increase is 25 percent per decade of age. We have this whole mass of data which we will not publish. We have no money to do this on our own. We have 223,000 admissions.

DR. HALDEMAN:

Dr. Anderson, a year ago, at our Conference, there was a good deal of discussion on whether proper utilization rate could be determined or developed. I think you took the attitude that there was no proper utilization rate. Some individuals took exception to this and said that objective criteria could be developed on a scientific basis which could be used as a guide to physicians in relation to hospital use. I wonder if you would get into the record some of that discussion.

DR. ANDERSON:

Since making the remark, I have changed my mind. (Laughter.) I have changed it to this extent—that if I were a dictator of a health services system and needed to allocate resources to go to the moon instead of spending it on hospitals, I would cut back all hospitalization to emergencies; I would include normal maternities, so I would cut it back 70 percent and so 30 percent is necessary.

DR. HALDEMAN:

Would you go on and discuss the factors influencing what you consider proper use?

DR. ANDERSON:

Well, I was being facetious, of course. However, if we get our doctor data, the results will probably agree with the patient perception because the patient is very likely to reflect what the doctor said or expressed.

In today's prevailing methods of medical practice it would appear that hospitalization is absolutely necessary in 80 percent of the cases. The patients feel it is absolutely necessary and, therefore, I cannot deny it. This is how they feel and this is what they are willing to pay for. Therefore, I will work on the other 20 percent, to find out more about that.

My personal feeling is neither here nor there. Do you want a tight or loose system, given reasonably good quality, etc.? Do you want to wait 3 months or don't you want to wait more than a week? Figure out what kind of system, what kind of check points you need, etc.

Of course, if there is enough money, I personally would prefer a loose system. However, if you want to go to the moon instead of going to the hospital, then we may have to cut back 20 percent.

DR. PAYNE:

I am here to function as a physician and there is one misapprehension that ought to be brought to your attention about false labors because, after all, it is in just this sort of misunder-

standing that people who deal with statistics alone do make errors in dealing with medical facts.

False labor, if it is a limitation at all, is a patient limitation, not a physician limitation. The patient honestly comes into the hospital in labor and then, for reasons nobody understands, stops having contractions. The logical thing is for them to go home, which they do. They may occasionally have several episodes of false labor before they actually go into labor that terminates in a live birth.

This is, as we choose to call it, a patient limitation. This has nothing to do with the skill of the physician in choosing when the patient goes into the hospital. There are times when he will actually delay a patient's admission to the hospital unwisely so that delivery occurs in an ambulance, in a taxi, and, as a result, these things do get into the newspapers. Therefore, the inclination of the patient is to demand admission when in labor and the physician complies because the patient is in labor. It is only later that this ceases.

DR. ARTHUR C. HOLLISTER (Department of Public Health, California):

The previews of this paper published in our little bound book from the Conference last year mentioned considerable emphasis was going to be placed on nonmedical factors relating to this and perhaps I missed the discussion and I apologize and can be ruled out of order. However, I think you were going to look with particular emphasis on such things as home environment, patient's family and family pressures for hospitalization, and availability of insurance. I believe you spoke on one but not on the other two. Therefore, are there any other comments you desire to make about the points we have not cleared as yet?

DR. ANDERSON:

I don't have information on them yet. The factors you mentioned will not be ignored. It is a matter of budget and finances.

DR. I. WEISSMAN (Hospital Council of Western Pennsylvania, Pittsburgh):

I think we have to be more specific regarding some of the admission statistics. For example, in Michigan the average stay for a coronary occlusion is 3 weeks, and elsewhere it is 7 weeks. Also it is indicated that the average maternity stay in one place may be 21 days and in another place 7 days. Therefore, I think that in the long run the concept we need is a medical one and you can get some consensus about that within some range.

DR. ANDERSON:

You can get consensus but I don't know what consensus means. This is what we have to rely on.

DR. R. E. TRUSSELL:

I would like to support the views of those who think maternity patients should be included in some of these studies. Usually maternity services are poorly covered by health insurance because of the argument that even people with low incomes can still budget enough money to pay the rest of the bill. Thus the pressure is on the young person financially to get money together ahead of time. There are also other pressures which contribute to this poor coverage.

In our New York City system of municipal hospitals, we have about 35 or 36 thousand babies a year. One of our largest hospitals has between 6 and 7 thousand deliveries a year. This is under the direction of Professor Hellman, who believes that it is perfectly safe to send many women home the first day they deliver. He and Dr. Kohl have published a paper based on measurements of a variety of factors for a large number of mothers and have come to a conclusion that they regard early discharge as safe procedure. Statistically it appears quite plausible and I am not arbitrarily condemning it.

On the other hand, the health department has sent public health nurses out to visit some of these people and they have found problems such as unwed mothers being sent home with babies and not receiving any instruction. Moreover, they find people who have developed a variety of complications.

I mention this primarily to emphasize the fact that utilization studies are useful in establishing a base from which to get into an epidemiological approach to morbidity following certain events within the hospital.

I think maternity is a field that perhaps should not be so easily excluded from study. Perhaps it can be tightened down between the two extremes of too long a stay and obviously too short with too little supervision for some patients.

THE CHAIRMAN:

I thank you for that comment, Ray. I think the last question was not intentionally not answered or not recognized properly. I think we will see, as various studies are reported today, that there is plenty of room for expanding method and investigation. This is a study of patients' opinions and physician opinion without measuring them against any standards. It has all those limitations. It nonetheless yields information about what patients thought happened and physician opinion as to why they proceeded as they did. However, this does not necessarily mean it establishes a standard. We would hope that it will be descriptive and raise questions that point toward the sort of research that Peterson and Barsamian and Dr. Payne and Dr. McNerney will be discussing.

TUESDAY AFTERNOON SESSION
January 22, 1963

The Conference was reconvened at 1:40 p.m., Mr Bugbee presiding.

THE CHAIRMAN:

Talks by Walter McNerney and his associate, Dr. Payne, will open this afternoon's session.

Walter McNerney is President, Blue Cross Association, a former member of the faculty of Program and Hospital Administration at Pittsburgh, and he organized the program at the University of Michigan. He came to his present assignment about a year ago, after a very extensive and rigorous study in the State of Michigan, touched off by action at the State level. This study, supported by the Kellogg Foundation, resulted from the concern expressed over the increasing use and price of hospital and medical care as reflected in the dollar increase in Blue Cross and Blue Shield premiums in Michigan.

Dr. Beverly Payne was very much involved in that study and, as I have already said, Dr. Payne is an internist, a member of the faculty at the University of Michigan. He will discuss Mr. McNerney's presentation.

On the platform we also have Don Riedel, a sociologist, who was a member of the study team and is now Director of Research and Planning, Blue Cross Association, and Tom Fitzpatrick, also a member of the study team, who is presently a member of the faculty of the graduate program in hospital administration at Michigan.

I assume, Walter, you will call on these people as indicated or they will join in the discussion, as you wish.

Michigan Studies in Hospital Use

MR. WALTER J. McNERNEY:

The major burden will be carried by Bev Payne. I will make a few introductory remarks. Tom Fitzpatrick and Don Riedel will join in answering questions.

Hospital and Medical Economics

I should like to start by discussing very briefly some of the studies within *Hospital and Medical Economics* that deal with hospital use, leading up to the study of *Character and Effectiveness* which Bev will discuss in some detail. The study of Character and Effectiveness is only one of several that deal with hospital use.

POPULATION SURVEY.—An area probability sample was drawn of the Michigan population and a household survey of the sample undertaken involving 1,031 families and 3,516 individuals. This work was done by the Survey Research Center.

The interviewers asked such questions as—what use do you make of health facilities; and what are the out-of-pocket costs involved? Also, they probed regarding unmet need and insurance status. Considerable personal data were collected.

The usual impact of age and sex on frequency of hospitalization was found. On a family basis, the younger families had higher use rates. On an individual basis, the aged had higher use rates.

A multivariate analysis of admission rates confirmed the effects of age and sex, plus prepayment and insurance on admission rates. For example, persons with high degrees of coverage, i.e., that paid 70 percent of the hospital bill or more, had almost twice the admission rate of those without coverage, after allowing for effects of age, sex, income, family size, attitude toward seeking early care, education of the families, and the region where the family head grew up. With adjustments for these factors, it was also shown that the admission rates decreased as income increased up to the highest income group, which was above the average.

The difference between those with high degree of coverage and the noncovered, in regard to frequency of hospitalization, was attributable largely to surgery.

This study also showed a positive association between patient days per thousand population and the availability of facilities.

One section of the Population Survey dealt with self-perceived need and also with treatment prescribed by a doctor that had or had not been followed. There was some evidence that those with insurance or prepayment had fewer self-perceived unmet medical needs than those without. Those without prepayment or insurance also scored higher on a specially constructed unmet needs index constructed on the basis of reported symptoms or difficulties.

There was evidence that the seriousness of the reported symptoms, according to the needs index, had little bearing on individual plans to get treatment.

The principal factors causing delay seemed to be: "too busy" or "can't afford it" for those who intended to get some care, and "money" and "disagree with doctor's advice" for those that did not plan to get it.

The Population Survey introduced for the first time the application of multivariant analysis to hospital and medical variables on a large scale. It was unique in the development of the unmet needs index, and, I think, in the extent to which information was validated through resort to basic records in hospitals and prepayment and insurance companies.

HOSPITALS AND ALLIED INSTITUTIONS.—This study also dealt with the relationship between utilization and availability of facilities. It showed a strong association between the two. Patient days per thousand population were examined in relationship to the availability of hospital beds, with controls on population per physician, average size hospital, effective buying power index, percentage of the population 65 or over, percentage of the population urban, and the cost per patient day.

The largest single cause of variation in patient days, some 71 percent, was attributable to the number of beds available. The average size of the hospital was next, followed by percentage of the population urban and cost per patient day.

A second multivariant analysis omitted cost per patient day as an independent variable and supported the first analysis.

PREPAYMENT AND INSURANCE.—Although the studies under this general title do not bear directly on hospital use, in the sense that we have been talking about it, I might at least make reference to a few of them. An attempt was made to measure the comparative loss ratios of groups over 100 members in size leaving Blue Cross and going to commercial insurance over a 4-year period and those over 100 in size going from commercial insurance to Blue Cross. The majority of the groups had 3 years' experience before they moved.

Groups leaving Blue Cross had an average loss ratio that was significantly lower than that of the groups joining Blue Cross. The trend was toward higher ratios joining Blue Cross. Group representatives leaving Blue Cross who were interviewed cited, in a large number of instances, the element of rate in making a decision. Michigan Blue Cross follows a relatively pure form of community rating. The commercial companies involved in the study experience rated their accounts. The results of the study showed that the experience-rating techniques were skimming the good risks from Blue Cross leaving Blue Cross with a disproportionate number of high risks.

Under the general topic of "Prepayment and Insurance," the effect of the group characteristics on claims experience was studied under Blue Cross. The groups were divided for analysis purposes into size categories, occupational categories (such as manufacturing, commercial, utilities, government, professional, farm, and hospitals) and geographical categories. Within and among categories the range in loss ratios was extensive. For example, by occupation alone, the loss ratio for government at one extreme was about

90; for hospital personnel at the other extreme it was about 128. By geographical region over the State, the extremes in loss ratios were from 88 to 120.

Such a gross analysis is good only for screening purposes. It is highly desirable to go into much more depth by adding such variables as per capita income in the area, availability of facilities, employer contribution to the costs of the care, urban-rural mix, effectiveness of hospital care and morale factors.

The relationship between benefit levels and hospital utilization was studied. Two pairs of groups were selected with similar occupations, in similar geographical locations. They were of sufficient size to control the effects of age and sex. Types of benefits differed significantly within each pair.

In groups A and B, A had highly indemnified benefits through commercial insurance and group B had a fairly comprehensive contract through Blue Cross and Blue Shield. In group C there was an indemnified base; in group D a Blue Cross-Blue Shield base; major medical was superimposed in each case.

The findings showed that the claim rates were lower for both males and females under the more limited benefits in each pair of groups. Furthermore, the greater degree of indemnification between the two groups that were indemnified, produced a lower average claim rate.

Here was an attempt to match groups and to get at the question of the impact of benefit level on hospital utilization. This method has its difficulties. Often one cannot take into account enough variables through the matching process. Also, satisfactory prototypes are hard to find. It would be well, in addition to the above method, to get levels of benefits through a population survey, put these on a continuum, and analyze them concurrently with relevant variables.

The effect of layoffs on continuity of coverage during recession periods was studied. You will recall that in late 1957 and early 1958 there was a recession. A large company in Michigan made it possible for employees, even though laid off, to continue health coverage for 12 months at group rates and benefits. In fact, for 2 months after the layoff premiums were prepaid. Also, for 1 month loss of income was prepaid.

A sample of those laid off in February of 1958 was selected for study. First, prepayment status before and after layoff was examined. Then utilization was plotted in the following ways: for the year prior to layoff, from the layoff date to date of disposition, for comparable months in 1957 to layoff months in 1958, and for the month following layoff compared to the same month the previous year.

A rapid decay in enrollment was found. In the first billing 33 percent of the persons in the sample did not take advantage of the offering of group rates and benefits. Later an additional 24 percent did not pay their billed rates, bringing the total of those who dropped their coverage to 57 percent, even though in some cases the wife was pregnant or medical need was imminent.

The utilization rates during the layoff period were from 1.5 to 7.9 times those for the same people during a comparable period in a previous year. In March following layoff, the utilization was from 6 to 14 times the utilization in the control period a year previous.

It was interesting to note that those who continued coverage were higher users before and after the layoff period. There was no noticeable difference between family and single subscribers, but a special study of spouses revealed that there was no increase in their utilization during the period studied. The increased use was entirely attributable to the subscriber himself.

This has been a very brief overview only. There are included in *Hospital and Medical Economics* other studies that bear on the issue of hospital use involving some designs that have not been used previously. Many topics beyond hospital use are also included.

In the study of *Character and Effectiveness of Hospital Use*, Dr. Payne's topic, during the early stages we wrestled with the problem of how to measure the validity of hospital use, very conscious of the fact that this would undoubtedly be one of the basic and central questions to arise when Blue Cross rates were under scrutiny.

We, as all of you probably have at one time or another, looked first at the possibility of measuring variation in current practices. An analysis of variation, however, even when several independent variables are available, leaves unanswered whether one extreme or another, or any other point, is the point of effective use. The study of character of use which we did undertake did point the way successfully toward areas that

needed further investigation, but it did not provide hard answers on how valid the use was.

We examined the possibility of the case approach, i.e., asking knowledgeable physicians to look at selected records, and to make professional judgments regarding such things as adequacy of the history and physical relevancy of the procedures, and appropriateness of the length of stay. Scales of excellence could have been developed to refine the analyses.

This approach was discarded because it looked to be too subjective. It involved too many opportunities for physicians to rationalize differences. In the absence of any specific criteria or reference points, it would have been difficult to evaluate the results in retrospect or to have duplicated the methods over time even within one institution. Certainly it made comparisons among institutions very difficult.

There was also the possibility that we might use a longitudinal approach in evaluating hospital use. Possibly certain results could have been related to certain procedures. This, however, promised to offer many technical as well as cost problems.

We came ultimately to the idea of flexible criteria of effective use being developed by experts and applied to a probability sample of records in a probability sample of hospitals. Through this method, appropriateness of admission, relevance of procedures, and understay as well as overstay could be measured. Also, some of the following advantages could be obtained:

The method could reflect the best thinking that was available at a given point in time, assuming that the experts were well-selected. We felt it could be objective because the criteria could be developed prior to the evaluation and by different people. We also felt that the method could be duplicated consistently within a hospital or among hospitals over time. Finally, we felt that this approach could give some substance to the idea of norms and still leave room enough for interpretation when provision was made for interviews of the attending physician.

It was recognized that this would be a time-consuming process and that there was a danger of the criteria being sanctified or used even when outdated. Both of these hurdles could be overcome, however—the first through the development of successful prototypes and the second through judicious administration.

Dr. Payne will discuss the development of the criteria and their application to patient records. We are convinced that this approach is practical and that it can be used to great advantage by hospitals and other agencies.

Dr. Payne will not be talking of measures of quality, although there will be qualitative aspects to a great deal of what he says. The criteria are not detailed enough to bear directly on quality. Ultimately, the techniques Dr. Payne will describe should be applied to whole episodes of illness on a population survey basis and joined to other studies to explain more effectively, for example, why loss ratios vary so much among groups. With that as a brief reference framework, I should like to introduce Dr. Payne.

Character and Effectiveness of Hospital Use

DR. BEVERLY PAYNE:

Thank you very much. I was told that this was going to be a very small meeting and that we would sit in a very confined area and exchange confidences. So, if you will get close in, at least figuratively, this is exactly how I intend to talk to you about these negotiations that were developed in the Michigan study. I will attempt to explain the problems as we anticipated them and the problems that we could not anticipate; problems of criticism that we hoped to answer before we were ever questioned.

You have been told that we finally decided upon developing criteria. Since this had never been done before in a formal way, this was an innovation which caught most of the physicians with whom I had discussed this quite by surprise. Fortunately, physicians behave in a fairly predictable manner, at least in their own practices, and have their own criteria for behaving as they do. Therefore, when you get a consensus among them for the care of patients, a reasonable assumption can be made as to what they do in practice. And I will assure you that the results of the study convinced us that our assumptions were true.

Now, our first problem was one of establishing who was to do this criteria development—who was competent enough and interested enough, involved enough, to create criteria for care, for

measurements of appropriateness of admission, and for length of stay in Michigan hospitals.

Now, since I live in Ann Arbor and am part of the University faculty, my first contacts were with my colleagues. I went to the best advice I could get, to the heads of the departments at the University Medical School and I asked, "To whom might I go in the State to form a panel to consider the establishment of criteria?" In each instance I was given a list of physicians whom I might approach.

The approach was initially made by letter indicating to them the nature of the study to be done and our desire that they participate. I then made personal visits to all of the physicians who might be asked to join in this effort and in only one instance was my request rejected.

We ended with panels that represented physicians and specialty organizations from both medical schools, Wayne State and the University of Michigan, and one or more physicians who practiced in Michigan, who were considered outstanding because of their training, their participation in medical educational efforts, and who were recognized by the physicians in Michigan as a peer group.

Most of these panels consisted of three or more physicians. The panel in surgery was probably the largest. There were six surgeons—each of whom was very capable.

The panels were then asked to meet with us in Ann Arbor to establish criteria for selecting diagnoses that would have a substantial impact upon hospitalization in the State of Michigan in 1958. The statistical basis for the choice of these diagnoses came through Professional Activity Studies and, through them, we were given the 60 most common diagnoses occurring in Michigan hospitals in 1957. From this list we chose 18 diagnoses which represented 47 percent of the discharges from Michigan hospitals in 1958. We were fortunate that the diagnoses represented such a large percentage of discharges. It not only represented care that might reasonably be expected to be rendered by specialists and nonspecialists alike but also many phases of medical activity—surgery, medicine, pediatrics, orthopedics, urology, and gynecology.

The panels then assembled with the diagnoses they were to consider. The surgery panel was to consider inguinal hernia, cholecystitis, and appendicitis; the medical panel was to consider diabetes, acute myocardial infarctions, bronchial asthma, and pneumonia; the pediatric panel was to consider the same medical diagnoses as applied to pediatrics plus diarrhea occurring under the age of two and prematurity; the gynecologists considered the diagnoses of fibromyoma of the uterus and what eventually was called the conditions of pregnancy.

We had initially indicated the desire to study deliveries, but our panel convinced us that our goal was too limited—that we really needed to consider all of the conditions of pregnancy, including false labor, toxemia of pregnancy, cesarean section, as well as full-term deliveries.

Each panel then, in one evening of intensive discussion, created criteria which were then codified or listed in a coherent fashion. The criteria were then sent to each individual member of the panel for correction or additions or deletions and then, after we had the final confirmation by the panel, we composed the final new criteria. This was again mailed to each panelist for a final comment.

Each panel was expected to do four things:

First, create a criteria for admission, i.e., when should this patient with this condition be admitted to the hospital; what were the indications of the appropriateness of the admission to the hospital?

Second, determine the procedures both necessary and consistent with the diagnoses, i.e., which procedures would logically be produced in the hospital for each individual diagnosis?

Third, determine what complications might affect the length of stay in the hospital.

Fourth, assess the expected length of hospital stay.

Finally, appraise the indications for discharge.

One other activity was undertaken by the internal medicine panel, but we were unable to make use of it. I mention this because I hope that in the future it can be used. This was the criteria for diagnostic admissions to the hospital—when is a patient logically expected to be admitted to the hospital for diagnostic procedures? The criteria for admission obviously differed with each diagnosis.

In most instances, the criteria were quite stringent and required the physician admitting the patient to the hospital to be intimately familiar with conditions of the patient.

We had hoped to develop procedures to measure proper or appropriate use of laboratory, X-ray, and physiotherapy facilities. These we were able to develop only to a certain degree—that is, it was possible for the panels to tell us what procedures were certainly necessary in each diagnosis but not to identify excessive use of these ancillary services.

We were unable to get a consensus on a top limit of procedures to be done in the hospital—for instance, in diabetes it is quite possible to say that the patient who is admitted must have a blood count, urinalysis, chest X-ray, and blood sugar. But the immediate question is how many blood sugars? This was impossible to answer. It was also impossible for the panels to determine in advance what procedures might be appropriate for the complications that might arise. Attempts at this would lead to endless numbers of procedures that might be applied for the complications of the admitting diagnosis. This problem was resolved by a recognition that any procedure done in a hospital that was consistent with the diagnosis or the complication, or a symptom that the patient might have expressed, whether it was found in the chart or elsewhere, was an appropriate procedure if it did not unnecessarily prolong the stay in the hospital.

The complications affecting length of care listed were those that we familiarly associate with certain diseases—such as infections that follow operative procedures, or pneumonia that follows coma in diabetics.

The problems the panels had in establishing an expected length of hospital stay were not nearly so great as we had anticipated. We approached this with more fear and trepidation than afterwards seemed necessary.

The panel members were knowledgeable men working in a field that they had been familiar with for 30 years or more. They knew their own practices, they knew what they had taught medical students and, as a result, it was not a problem for them to determine a definite range as to length of stay for most of the diagnoses. This was not possible in certain diagnoses, and we knew that it would not be.

Affecting the length of hospital stay was not only the primary diagnosis, but the age of the patients and, in some instances, their distance from the hospital. These are certainly not medical indications, but nevertheless they had to be considered by the physician in all instances of certain diagnoses. I refer here to surgical patients who lived at some considerable distance from the hospital; for example, women who were having a hysterectomy. Indication for removal of the uterus implied that consideration be given to the age of the patient, the number of children in the family, the size of the uterine mass, and symptoms directly related to the presence of the tumor.

In all but one instance, it was impossible for the panels to decide that there was a single day of appropriate length of stay. They readily agreed, however, upon a length or range of stay as being appropriate and, in the case of acute myocardial infarction, identified the minimum length of stay as 3 weeks and left the appropriateness of time of discharge to be answered through additional criteria that referred entirely to indications for discharge.

It was absolutely impossible to develop criteria for expected length of stay for the diagnosis of diabetes. Diabetics vary too much in the degree of severity of diabetes and the ease with which physicians gain control of the diabetes or feel enough confidence in the manner in which patients become familiar with their diet and with the administration of insulin to discharge them.

In this one diagnosis, diabetes mellitus, the evaluation required a physician's judgment as to when the patient was satisfactorily controlled for discharge. This, I think, was the only diagnosis in which I as a physician had to make such a determination. In all other instances, the discharge criteria were clear enough so that, without exercising judgment, the appropriateness of length of stay could be determined.

Indications for discharge were relatively easily established. In surgical cases the indications for discharge were that the wound was not infected or had satisfactorily closed, that there were no complications of the illness, that the patient was ambulatory, and that no elevation of the white count, temperature, or pulse was evident.

Criteria for discharge in the acute myocardial infarction were also explicitly spelled out: that the patient must be free of fever, that his electrocardiogram must show no progressive changes, that he be ambulant, that his anticoagulant control be established, that hospitalization must have lasted at least 3 weeks or 21 days subsequent to the infarction. I speak of it in this way so that you will understand that myocardial in-

farctions are not always an abrupt episode. They sometimes develop over several hours, or even several day's time, and in applying these criteria we considered only the date of the established infarct when the period of medical shock had ended and, from that time, applied 3 weeks more as the required length of stay. Patients discharged before that date were considered as understay.

Patients discharged in less days than provided by the panel were considered as understay. If they stayed longer than the range provided or longer than the discharge criteria identified, then they were considered overstay.

As we applied these criteria to case abstracts, a few modifications became necessary. This invariably happens when you apply a new tool to a job; you find its shortcomings and make modification. Modifications were necessary in the criteria for conditions of pregnancy.

The matter of the unusual range of length of stay in uncomplicated pregnancies has already been referred to earlier today. This used to be 2 and 3 weeks and is now 5 days or less, depending upon the year of study. The panel, which consisted of two professors of gynecology and one practicing obstetrician, had difficulty in reconciling their views as to the length of stay in pregnancy cases. They indicated that admissions should be for 5 days in multipara and 6 days in primipara, respectively. However, it immediately became apparent as we began collecting data that most patients in Michigan were discharged in 4 days or even less. This brought to light a situation that had been difficult for obstetricians to resolve—that is, the experience of a doctor who lived in Detroit and whose practice involved a teaching hospital in which the obstetric beds were limited in number. As a result, he had to make some very practical adjustments to his ideal of 6 days. He compromised by discharging the patients in this hospital on the third day and providing adequate followup care in the community with an excellent visiting nursing service based in the hospital. These patients, although discharged from the hospital, were followed closely and daily for the first week after leaving the hospital. The experience with readmissions and complications was low enough to convince him that a 3-day stay under these circumstances was satisfactory. Thereafter, our panel criteria were modified to include this briefer stay.

I would like to make some observations regarding the criteria developed.

One: they are detailed. I started to say "extremely detailed" until I saw those developed by Dr. Peterson. His are much more detailed than we attempted. They are concerned primarily with the quality of care rendered patients in the hospital, and we are concerned with the length of stay and appropriateness of admission. Therefore, the criteria were very rigid in regard to admissions to the hospital and flexible otherwise, always representing the range of proper stay or appropriate stay in the hospital.

Detailed provisions are made for variations in the patients and contingency of their illnesses.

The ranges of length of stay are, in general, large.

Some standards, as I have indicated, were debatably medical—age, distance from the hospital, available care at home, and the number of children.

Hospital data were then collected by teams of medical students and physicians and evaluated by three physicians and classified either as "understay," "appropriate stay," or "overstay."

Those cases considered "overstay," a sample of those considered "appropriate," and all of the "understay" were interviewed. These interviews were carried out with a total of 842 physicians, who were responsible for over 1,696 cases. Only 1 percent of the physicians refused the interview. Two percent were not reached because of death or having moved from the State.

After the interview with the physician, who supplied about 25 percent more medical information than had been derived from the chart itself, a final evaluation of the case was made. The case was again identified as either appropriate stay, understay, or overstay. In summary, the final evaluation showed 2 percent inappropriate admissions in the 18 diagnoses, that 6.8 percent were understay, that 9.6 percent were overstay, and further, that about 83 percent were appropriate stays.

DISCUSSION

DR. TRUSSELL:

I wanted to ask if the original records were not sent to somebody to abstract?

DR. PAYNE:

I skipped that because time ran out. Abstracts were made from the chart by teams of medical students with a physician in charge, visiting the 47 different hospitals in the sample. All of the cases were abstracted by the students on forms appropriate for each disease and then were brought back to Ann Arbor. The evaluation was made there by a physician, myself, and two others.

THE CHAIRMAN:

Are there other questions?

DR. E. G. JACO:

I have two questions. First, Dr. Payne, were any studies made on the decision-making process of these panels? For example, how fast and easy or long and difficult was it to reach decisions about the appropriate criteria for each of the categories you discussed, and were there, perhaps, any minority reports, so-called split decisions, or disagreements? What degree of consensus did these panels have in arriving at the criteria? That is one question.

My second question is prompted by the fact that the papers presented today have been focusing on the overuse of hospitals. However, what about their underuse also, at least from the research standpoint? Can the same criteria, set up for the optimum or appropriate hospital use, be used to measure underuse when such criteria are under met, just as their being over met would be a case of over-use? If the rate of overstay were to equal the rate of understay, would that mean that the hospital in that case would balance out all right?

DR. PAYNE:

There was no formal study made of how quickly or how well the panels arrived at a consensus. However, I can say from personal observation, since I was with each of the panels, there was a great deal of discussion—there were many points of disagreement which were finally resolved by the panels. In one evening they agreed in principle upon all of the criteria and then corrected or approved them as we mailed them later. Criteria were developed so that understays could be identified and, as reported, there were 6.8 percent of understays in this study.

THE CHAIRMAN:

As with the other studies, this does not show those that should have been admitted but were not. It was simply a study of hospital population.

MR. TOM FITZPATRICK (School of Business Administration, University of Michigan—now with Hospital Service Association of Western Pennsylvania, Pittsburgh):

I just wanted to add one thing—there is an index of the effectiveness of the hospital understay which was added to overstay but not balanced. In fact, I think we got some indication that the combination of the two, in sum, is a measure of some characteristics of hospitals.

MR. McNERNEY:

Although we are talking effectiveness only, when you come to understay, it implies that somebody is not receiving a service he should—this has definite, qualitative implications.

DR. HALDEMAN:

What were the characteristics of the hospitals that had more or less overstay and understay? Could you tell us also if there was a difference in the characteristics of the type of staff and the qualifications of the staff?

DR. PAYNE:

This was something I had not gone into because I was told that you were more interested in the development of the technique. However, results of the study indicated that large hospitals, those having a large burden of welfare cases, had a longer length of stay and more inappropriate use of the hospital. This inappropriate stay was also increased in hospitals that had a large responsibility for teaching. There was a graduation of overstay from hospitals with interns alone to hospitals with interns and residents, to hospitals with interns, residents, and medical students. In hospitals where medical students were present, the length of stay was much longer. This is a reflection not only of the fact that this teaching function is present but also that they have a burden of welfare cases. Sufficient multivariant analyses have not been available to me to resolve this exactly.

THE CHAIRMAN:

Are there any other questions?

MR. FITZPATRICK:

I want to say that we can explain that specialists keep their patients in the hospital longer than general practitioners. However, there is one more interesting figure—the inappropriate use was greatest in the hospitals of less than 50 beds. They had the most underuse and the most combined underuse and overuse, although they did not have the most overuse. Many factors are involved. However, the hospitals which had the greatest degree of appropriate use with regard to size were the 250 to 499 bed institutions. Hospitals with 500 beds and up had the preponderance of welfare cases and a higher age concentration. They also had a drastically smaller proportion of deliveries to total cases—about 11 percent as opposed to 18. I don't remember the exact numbers.

These large hospitals also had the greatest number of specialists. We measured this by the staffs with less than 25 percent specialists, 25 to 50 percent, and so on. This group was in the 75 to 100 percent range and had the internship, residency and, in most cases, undergraduate medical school training as well. All these factors have, we believe, something to do with the pattern of use.

MR. McNERNEY:

Do you want to comment on the general practitioner and how his behavior changed depending upon the percent of specialists on the staff?

MR. FITZPATRICK:

Yes, I think we uncovered as many questions as we did answers. However, with the length of time in practice, the general practitioner's use of the hospital approached somewhat that of the specialist. Similarly, where the general practitioner was on the staff, the majority of members of which were general practitioners, his use was drastically different from that of the specialist. When he was on the staff of a hospital with 75 percent or more specialists in practice, with regard to effectiveness, use by the general practitioner was indistinguishable from that of the specialist, which argues, apparently, for a great degree of colleague control.

REPRESENTATIVE:

Did you have any physicians on the staff of the two different hospitals with different characteristics?

DR. PAYNE:

I am sure there were but they were not identified.

REPRESENTATIVE:

Was there any chance that the bigger hospital had more severe cases within diagnostic categories? Was that taken care of by evaluation procedure?

DR. PAYNE:

It was taken care of by criteria. I spent more time on developing criteria than anything else because I think this is a central point for any such evaluation of care. Also, I would like to emphasize that criteria of this nature can be developed for qualitative as well as quantitative care and can be applied simultaneously by either a staff committee or by a group measuring care within a region or within a State for that matter.

MR. JACOB J. FELDMAN (National Opinion Research Center, Chicago):

Was any attempt made to correlate the level of occupancy in hospitals with understay and overstay? It seems possible that understays were more prevalent in situations of bed shortage and overstays more prevalent in situations of bed surplus.

MR. DONALD C. RIEDEL (Director of Research and Planning, Blue Cross Association, Chicago):

We tried. I was very much interested in this because I was sure in my own mind that it has some effect—the higher occupancy being related to perhaps a lesser amount of overstay or vice versa, with perhaps the overstay creating an occupancy problem. We attempted to get detailed data on occupancy since we were of the firm belief that a gross occupancy figure for the entire hospital was of little use. Therefore, we tried to get it by division of the hospital—the division of the hospital the patient was in. Even that, however, isn't good enough. What you really need is not

occupancy for over a year or a month, but the occupancy at the time the patient was discharged or admitted, depending upon what you are evaluating. The fact was we could not get the data. We tried, but ended up with only 35 hospitals that had somewhat useful data. We could not do the entire job well and we let the rest go.

MR. McNERNEY:

I should like to stress the point that the criteria we have been discussing are reference points which can become oppressive, can become sanctified, or can be very useful depending on the skill of hospital and medical leadership. They represent a bold approach to evaluating hospital performance on an individual hospital or areawide basis. Their potential misuse should be weighted lightly compared to the public's persistent cry for evidence of effective performance.

THE CHAIRMAN:

I think most of you know Paul Densen as one of the most experienced biostatisticians. He had his training at Johns Hopkins and has been involved with the Health Insurance Plan and is now deeply involved in a research unit in the Department of Health in the City of New York.

Sam Shapiro was with NORC for some time and now is Director of Research in HIP. He has been involved with Paul Sheatsley in NORC and with Odin Anderson in many of their joint activities.

I am going to call on Paul and then I assume that Sam will probably follow with his comments.

Hospital Use Under Varying Forms of Medical Care

MR. PAUL M. DENSEN (Deputy Commissioner of Health, New York City):

As I was sitting here this morning listening to the discussion, I cast my mind back to the situation we were in in HIP when we first began to think about doing these studies and wondered why we got into this kind of study in the first place. I believe it was because we were in a group practice organization which a lot of people were watching with a great deal of interest. When it was originally organized, a great many statements were made to the effect that, if you have a group practice organization, you should have better medical care, and a number of similar generalizations.

Being somewhat quantitatively minded, we thought it would be desirable to see whether some of these things were actually happening, and we started to wonder about how you go about looking at this. From an ideal point of view, if you were in a laboratory situation, you would take a group of people and randomize them so that some of them would be in HIP and others would go into another kind of an organization. It is evident, from the discussions thus far, that the problem of studying in some objective fashion the impact of various forms of organization and various forms of medical practice on hospitalization and on quality of care is exceedingly difficult for the simple reason that you are not in the laboratory situation. Thus, you have to take people as they come and try your best to approximate the laboratory situation by setting up two groups as nearly comparable as you can make them. From that point of view, we began to cast around to see whether we could get a non-HIP group that was reasonably comparable to the HIP group in many of its characteristics. It suddenly dawned on us that Blue Cross in New York City had in its basic files the kinds of information that would be needed to study at least the problem of hospitalization. We were not making any assumptions about what hospitalization had to do with quality of medical care at that point, nor have we made them since, as far as that goes. We simply were interested in seeing what happens to hospitalization under different ways of providing medical care.

From that point of view, we began to carry out the three studies which I shall report. Now, I know that this is a very sophisticated and knowledgeable audience in this field of health and medical care programs and also in regard to research approaches to these problems. The purpose of this meeting, as I understand it, is to look at the facts and consider the implications for further work. I am going to assume that the studies that we have carried out in HIP are well known to this audience, so I shall not review them in detail. I shall only present the general findings of these

studies and then attempt to discuss some thoughts regarding further work.

Hospitalization Rate in HIP and Blue Shield

In the first study we compared the hospitalization rate in HIP with those of comparable occupational groups insured by some outside agency. In this case the program was insured through Blue Shield.

Now, the admission rate in HIP was 59.6 per thousand population and in the non-HIP group, 77.3 per thousand.

If you limit the comparison to adults over 25 years of age (and, incidentally, these are all non-obstetrical admission rates) you get the same kind of a difference between HIP and the non-HIP group. If you include obstetric admission rates (as in the original report) you find the same kind of picture except that the rates are higher.

In this study, we were quite aware that there were differences in the medical benefits provided under the HIP program and under the Blue Shield program. Under the Blue Shield program the benefits of one contract covered largely in-hospital and surgical care and in another contract covered in-hospital, surgical, and medical care. There were a few out-of-hospital coverages in this particular Blue Shield program but, by and large, the coverage was within the hospital. Again, these are detailed in the studies.

The HIP program provided comprehensive medical care across the board.

The two programs differed, of course, in organization and in the method of paying the doctors. They were similar, however, in the Blue Cross benefits and we decided that we would start with this and see what we could learn. What we learned is summarized in the rates shown on the sheet distributed.

Dual-Choice Arrangements

Having finished that study, we cast around to see if there was any way we could make the comparison a little clearer by controlling some of the variables. We found it was possible to carry this out in a study of HIP and the Dress Joint Board of the International Ladies Garment Workers. This Dress Joint Board offered the members of the Union a dual-choice arrangement—they could either choose HIP or they could choose the Group Health Insurance program in New York—another non-profit program. These two programs were similar in their medical benefits and similar in their Blue Cross benefits. They differed, however, in organization and in the method of paying the doctors.

In this comparison again we have HIP as the group practice program; the other program, Group Health Insurance, is one which has a program of participating doctors but has no medical care organization for which it is directly responsible. It works with the doctors in the community as does a regular insurance program. In other words, the medical care is given in the general framework of practice in the community.

Here we have to limit the analysis to adults aged 25 and over, and again you will find a difference in the hospital admission rates. In this study we have been able to eliminate one of the variables of the previous study—the difference in the medical benefits. The medical benefits were exactly the same in these two groups and yet the hospital admission rate was lower for HIP than for the non-HIP group.

Now, obviously, one of the things that comes up in such a study is the need for a fair amount of ingenuity in attempting to find ways of testing some of these selective factors which may be operating. In this study the question came up: What were the selective factors operating which decided one part of the Dress Joint Board membership to choose HIP and the other part to choose Group Health Insurance?

So far as we could judge, these selective factors, whatever they were, were not related to the question of health status. I can cite two pieces of evidence in this connection.

Three different locals were involved, and the proportions of the union membership in each of the locals which chose HIP differed considerably. One of the locals had a very high proportion of its membership which chose HIP and the other local had a high proportion of its membership which chose GHI. However, in both of those situations, when you look at the data specifically for each local, irrespective of the fact that proportions which chose HIP differed con-

siderably, the rate of admission was lower in the HIP than in the non-HIP group.

We were also very fortunate at the time of undertaking the study that the Health Information Foundation was carrying out a study of attitudes toward health problems among these same groups of union workers, as well as some others. They included the Dress Joint Board workers in the program, and their findings became available to us.

Insofar as we could tell from the data, the attitudes of those members who chose HIP and those who chose GHI with regard to health were essentially the same in the two groups. There were no major differences between them.

Furthermore, the previous expenditures for health care, which, if I remember correctly, was over $500 in the previous year, were the same in the two groups. Therefore, we could not find any evidence in this study that the two groups differed in regard to their health status. That is the factual evidence.

There is one interpretive comment I might add from knowledge of the union situation. It is my guess that the choice between the two medical care plans by the membership was not so much an individual decision as a decision based upon the particular attitude of the union leadership. This really decided, we believe, in this particular instance, what plan the men chose, depending on which local they happened to be in. Of course, there were differences among the union leadership in these locals.

The third study I want to mention is one which has come out fairly recently. It extends this attempt to look at different situations and see what they do to the hospital admission rate, to another dual-choice union situation—in this case District No. 65 of the Retail, Wholesale, and Department Store Workers Union.

The difference between this study and the previous studies lies in the fact that in this study the union self-insured its membership. It did not seek an outside insuring program and it exercised a considerable control over the utilization of the hospitals by its membership. For example, it looked at the bills, and it conducted an educational program. This particular union has quite a paternalistic attitude—it tries to keep its membership pretty well identified with the union.

In this third study, the data did not jibe with the two previous studies. In essence, we found no difference in the hospital utilization rate between the HIP group and the group that utilized the union's own program for providing medical benefits and hospital benefits.

Again, we had similarity in medical benefits and similarity in hospital benefits but difference in organization and in payments to the doctors.

I think it is important to note that, although there was no difference in hospital utilization in these two groups, the hospital admission rates themselves are very low. We did everything we possibly could to test the hospital admission rate to be sure we had not left out any hospitalization that should be included either in the HIP group or in the non-HIP group. These are covered in detail in the report. However, so far as we can tell, the kind of adjustments which were made in analyzing the data did not raise the rates by but a very small proportion of the total. Therefore, we find again that we have low hospitalization admission rates.

The suggestion this study carries is that there are ways of controlling hospital admission rates other than group practice.

Again in this study we have to consider the question of the possible selectivity of who chose HIP and those who remained with the union's own plan. We were able to look at this in this particular situation by looking at the out-of-hospital utilization of the HIP group and the non-HIP group. So far as we could discover, when we looked at the out-of-hospital utilization, these were essentially the same in the two groups.

Now, these are the basic findings. There are still some residual questions that can be raised about the findings of these studies. I would like to comment on them specifically. These residual questions concern the availability of beds and the classification by hospital appointment. We went back to the 1955 data and made some special tabulations on this.

In the Blue Cross-Blue Shield study, the annual hospital admission rate is 77.3 per thousand for Blue Shield and 59.6 for HIP. We then classify the medical groups by hospital appointments. In the medical groups where at least two-thirds of the family physicians have appointments on the staff of one or more voluntary or proprietary hospitals, the rate is 62.2 per thousand, still a lower rate than in the Blue Cross-Blue Shield.

In medical groups where at least one-third of the family physicians have appointments as

associate or attending physicians, the rate is about the same as in the previous group and still lower than the Blue Cross-Blue Shield.

Here you have a situation in which whatever one of these sets of medical groups you choose to look at, chances are pretty good you would have no problem of getting this person into the hospital. There is, however, an indication that if the family physicians do not have the hospital appointments, this will have an impact on the hospital admission rates because for the medical groups where two-thirds or less of the family physicians have appointments on the staff of one or more voluntary or proprietary hospitals, then the rate goes down to 53.1 per thousand.

This suggests that in those medical groups there is a problem of getting the patients into the hospital. However, if you limit the analysis to those having no problem in staff appointments, you still have a difference in the HIP and non-HIP comparison.

What about the question of access to hospital beds themselves? There are some medical groups in HIP where there is ample evidence that getting the patient into the hospital presents no special problem. Here you get an admission rate of 67.4 per thousand. The overall rate of 59.6 is increased, but it is still lower than that in Blue Cross-Blue Shield.

In the rest of the medical groups, the rate drops back to 57.8, again suggesting there may be something in the argument that the overall low rate is partly due to the fact that you do not have access to hospital beds. But if we take these data as they stand, it is hard for me to see how access to hospital beds in and of itself can account for the differences we have in the two studies. It may be a contributing factor, but it does not account for all of the differences.

I might say in passing, though, that I have other data here to indicate that the overall stay in the hospital in all of the studies was essentially the same in the two comparison groups—both as to average length of stay and distribution of length of stay.

Now, where do we go from here relative to these kinds of studies? We feel in New York City that the hospital admission rate in HIP is lower han it is in the non-HIP situation, when you nake the groups as comparable as you can.

I think we need to make further attempts to control the variables in the HIP comparison. We have to examine other situations and see whether this continues to hold up. There are other situations arising in the development of the HIP program which may make it possible to do this. I think that Mr. Shapiro is planning to look at this when sufficient data have been accumulated to make it worthwhile.

For example, there is now a dual-choice situation among State and Federal employees and this makes it possible to make another comparison. There will undoubtedly be other kinds of occupational comparisons arising which will make it possible to continue to test the effect of group practice on hospital utilization.

We think that the differences between the HIP and non-HIP admission rates that we have observed in New York City are real. There is, however, still a great need to determine whether group practice in general leads to lower hospital utilization. Would this be true in other parts of the country, in other kinds of group-practice situations, and in other kinds of comparisons?

Now, I would like to comment amply on the methodological technique used in this study. You will notice that basically in the first study we used the Blue Cross files. You have to have a denominator to set the numerator against and you have to be sure, as sure as you can be, that you are getting all the pertinent cases into the numerator. It is not an easy job to do. It sounds easy until you try it and begin to think about the question of how people can be missed in the numerator and in the denominator. Constant attention must be given to this problem.

In connection with studying the variation in hospital admission rates by different kinds of coverage and different kinds of medical care organizations, there are many instances right in the files of Blue Cross which lend themselves to analysis because of the very nature of Blue Cross. We now have the Group Health Association of America too, which has a large number of group practice organizations in it. Some of the group practice organizations have now grown to a size where it is worth while taking a look at the experience of these groups. These large group practice organizations must have available in their records the basic information to carry out studies of hospitalization because of the nature of the plan. It isn't as though the material wasn't there—it is. But we need to find a way to organize it, to get at it. This, of course, requires large scale replicated

studies in specific geographic areas. Two organizations which are in an excellent position to initiate such studies across the board are the National Blue Cross organization and the Group Health Association of America. If they were to pool their resources and their experience, they could take us a long way further into looking at some of these difficult kinds of problems.

Research Requirements

MR. SAM SHAPIRO:

What I should like to add to Paul's thorough review of the studies on hospital utilization conducted at HIP concerns some of the research requirements that emerge from these experiences. First, it would appear that comparison studies of the type described should be prepared for small but important differences. The margins in the first two sets of comparisons presented were 15 to 20 percent and these could easily have been missed if large samples had not been used. Sometimes small samples will, of course, yield results consistent with findings in large-scale studies even where the expected differences are small. One such instance is the Health Information Foundation study referred to earlier by Paul. Here chance worked in its favor. The samples were small but the differences were substantial and stood the test of statistical significance. Actually, the odds were heavily against a statistically significant finding considering the 15 to 20 percent differences demonstrated in the HIP studies.

Another point that becomes clear when one considers the small margin usually under investigation and the many circumstances that may be influencing it, is the desirability of making comparisons between populations subject to similar local area conditions. The significance of this factor is apparent in view of the known variability of hospital admission rates and duration of stay by geographic area. One of the strengths of the HIP studies was the fact that the comparisons involved groups in the same city.

Leaving methodology aside and turning to questions that are raised about the HIP studies, there are two issues I want to comment on. One of them concerns the accessibility of HIP physicians to hospital beds. This point has already been covered by Paul, but it is worth adding that in selecting the category of medical groups "with no special problem in gaining access to hospital beds," a stringent set of criteria was used. Only six medical groups are included and, judging from what we know about the hospital appointments of their family physicians and specialists, there is a very little reason to believe that the HIP physicians have a more difficult time than other physicians in the community in gaining access to hospital beds. The fact that the hospital admission rate for these medical groups is below the rate for Blue Cross-Blue Shield is fairly convincing evidence that the lower hospital utilization rates in HIP cannot be explained away on the basis of differential accessibility to hospital beds.

The other question often raised, and Dr. Klarman wrote to me recently about it, is how does it happen that despite the lower admission rates in HIP for short-stay diagnostic categories such as respiratory diseases, the overall average duration of stay does not differ appreciably for HIP and the comparison groups. In an attempt to answer this question, we recently went back to the early study material and examined duration of stay for various diagnostic categories. Our interest was in determining whether there was any pattern in duration of stay for those conditions where HIP had appreciably lower admission rates than Blue Cross-Blue Shield. Briefly, no consistent patterns were found. In part, this may reflect a shortcoming of our diagnostic groupings. Perhaps some of the results of other hospital studies will suggest better combinations of diagnoses.

THE CHAIRMAN:

We now come to the last panelists for the afternoon. Dr. Trussell is Commissioner of Hospitals of New York. He is on leave from directing the School of Public Health and Administrative Medicine at Columbia. He is continuing to do that in any spare moments he has. Of course, how he has any spare moments, I do not know. Having lived in New York, I might say that he is doing some remarkable things in revising the direction of the municipal hospitals in that community. Also, it seems to me that about once a month a new major study has been reported by Dr. Trussell and his associates.

Jack Elinson and Miss Williams also are members of the faculty at Columbia. They are

experts in survey research. Jack, I know, was involved with Dr. Trussell, when he was at the National Opinion Research Center, in the studies of chronic illness carried on in connection with the Commission on Chronic Illness.

I will call on Dr. Trussell and ask him to say anything he wants and then also give Dr. Elinson and Dr. Williams their assignments.

The Use of Research Data in Hospital and Community Planning

DR. RAY E. TRUSSELL:

George asked me to do a kind of panoramic review of some of the things we have gone into and then let Dr. Williams and Dr. Elinson comment on some of the specifics. Because of my present frame of reference, that of being an administrator and trying to resolve some problems which sometimes seem insoluble, I perhaps am going to emphasize a little more the application of research than just the conduct of the research.

To understand what we are doing at the School of Public Health and Administrative Medicine at Columbia, it is necessary to keep a few points in mind. These are very simple points but they help to get our ideas into perspective.

We think that we exist to examine public problems and to train people to deal with them, through research and through administration. Furthermore, as a part of the University, which is in turn a part of the community, we also think we have an obligation to resolve some of the community problems to the extent that it is feasible to do so. Naturally, we are involved in a lot of local problems and work. Some of the work that we do is at our own initiative because of its academic interest. Dr. Elinson is going to review briefly one such study when I am through.

Most of our work in the last few years has been in response to some rather pressing problems felt by the State of New York, by the Puerto Rican Commonwealth, by the City of New York, and by management and labor working together either as trustees of pension and welfare funds, or through a foundation. Dr. Williams is going to run over one of the latter studies.

Our work in New York State, particularly in New York City, is concerned with problems which quantitatively are somewhat peculiar to our local area. However, the qualitative issues that we are dealing with are certainly national in scope, if not international.

It is gratuitous to point out to this audience that the kind of work we are talking about is time-consuming, expensive, and multi-disciplinary in nature. The way in which one attacks a problem depends in large measure on what is available in terms of data and funds, the technical developments in the field, and the importance of the problem in relation to the data to be gathered.

My impression is that we have to make more use of existing unpublished data, as Dr. Densen has said, while separately we go on refining methodology. Today we have been discussing some good examples of both efforts.

Finally, I might say that at Columbia we are a group who enjoy doing something about the problems we study. This enthusiasm is not uniformly shared by certain hospitals or physicians in New York. (Laughter) Nevertheless, both in the State and in the city, in the Department of Hospitals and in the Department of Health, major policy decisions and program implementations are being made on the basis of the kinds of research we are talking about today. This is a healthy trend, provided research does not become perverted into a basis for indecision.

At this point I would like to summarize some of the things we have been into and then ask Dr. Williams and Dr. Elinson to add their comments. Then we will answer questions.

Hospital Use for Narcotic Addiction

One of the earlier studies we undertook in connection with hospital use was in a highly specialized area, namely, the field of narcotic addiction. New York City has the only hospital operating exclusively for the care and treatment of adolescent addicts: Riverside Hospital. It is a 141-bed facility on an island in the East River, set up 10

years ago as a result of community hysteria about juvenile addiction. Because the patients are adolescents, they qualify for State aid under an interpretation of the State Health Department Medical Rehabilitation program, and 50 percent of the cost of their care is provided through State aid to the city. We were asked to do a rather empirical evaluation of what the Health Department was getting for its money in supporting the use of this hospital. We retained, under the general direction of Dr. Elinson and myself, a sociologist and a sociology student. In 1958 they studied the hospital use to find the statistics with regard to the people who had been admitted to the Riverside Hospital for the first time in 1955.

Well, a year-and-a-half later, as I recall it, we had some most disturbing data about the use of this hospital and, I might say, its uselessness. Of the people who had been admitted for the first time in 1955, 11 had died. These were all under the age of 21, in a population of 255.

Half of the time after the first discharge from the hospital, these patients were back in the hospital or back in jail. Half of the time they were in the community they were on drugs. Only eight never returned to the use of drugs, and they swore they had never been addicted. They were caught in possession of heroin and were committed. They put in their time and left, and that was the end of the experience.

As a result of this particular very empirical assessment, which resulted from a very strenuous effort on the part of two social scientists to find and interview these people (and we have tape-recorded interviews from 147 of them and recorded evidence on 94 percent of them), the City made a policy decision to move its narcotic treatment program toward research, prevention, short-term detoxication, and aftercare and to negotiate with the State for assumption of long-term treatment responsibilities. An announcement to this effect will be made within the next few weeks and I will be closing Riverside soon.

Health Insurance Plans

The second State problem that we got into had to do with the study of various health insurance plans in the State. This came about because in 1957 the Blue Cross Plan in the New York City area asked for a premium increase with very little public preparation. A public hearing was held, and it was quite a traumatic experience for all concerned. The rate increase was denied. Blue Cross promptly filed again, another public hearing was held, and again the conflict and the lack of facts were obvious. However, the financial data were also becoming more convincing and the rate increase was given. However, the carriers were called in and were asked to support a study of the health insurance plans in New York State by contributing voluntarily $150,000 prorated among them according to the premium involved. Well, they swallowed that manfully and went back and volunteered the $150,000. I wish I could finance all of my research this way. As a result, we were retained by the State to undertake a rather inclusive study of the various plans.

Our first effort was devoted to Blue Cross. We had about 20 people representing 11 different disciplines working on this particular study. In the area of hospital utilization we worked primarily with data which were readily available or could be made available by the plans or by some special studies that could be designed and carried out within a reasonable time and at reasonable expense.

We were concerned with the need for admissions, as Dr. McNerney's team has been. We did not do definitive work here. We were just looking for leads. We read records in several hospitals and it was quite obvious there were people going in who did not need to be there. However, we did not come to any definitive conclusion as to what proportion of people did not need to be admitted.

The length of stay data probably was of more interest to us than any other single thing. We compared, on a statewide basis, the length of stay of people admitted on Tuesday and people admitted on Friday. Briefly, in large hospitals which handle a very large volume of Blue Cross work, the average length of stay in the hospital will vary anywhere from 2 to 4 days longer among people admitted on Friday than for people admitted on Tuesday. The reasons, I believe, are self-evident. This has to do with the general shut-down of activity of the hospital over the weekend.

We did another interesting study of several thousand people in the New York City Blue Cross

Plan who had stayed more than 21 days. When a patient is admitted to a hospital in New York City under the 21-day Blue Cross contract, 180 days of half coverage are also available to him, and he is certified originally for 51 days of care, 21 full coverage and 30 half coverage. On the fifty-first day, the administrator of the hospital has to certify to Blue Cross that the patient needs to be in the hospital.

We followed the discharge rates of several thousand people who had stayed longer than 21 days. They went home each day at the rate of 2 percent, 3 percent, 4 percent, until the 51st day. On that day 45 percent of the patients went home.

Out of the Blue Cross study came the general conclusion that hospital cost per unit of service would continue to go up for obvious reasons which we described, that unnecessary hospital construction was a threat to both the survival of voluntary systems and to the survival of Blue Cross, and that it should be dealt with at the local regional level through community planning.

As a result of this, the State legislature created the State Hospital Review and Planning Council and the Governor encouraged the formation of regional councils which are supposed to coordinate their work with the State Council. Currently in New York State we are involved in a bit of a strained situation about giving the regional councils the authority that we really think they should have to do planning, to investigate unnecessary building and, at the same time, to encourage necessary building.

The proprietary hospital problem in New York City is a particularly severe problem, as Mr. Bugbee can tell you. Twenty-five percent of the private practice beds in New York City are proprietary. In the last few years I have been writing reports which are aimed at the Commissioner of Hospitals, and now I find myself in the odd position of getting my own reports because I license these proprietary hospitals. Consequently, we have been taking an administrative position that future proprietary hospital expansion will not be done until after consultation with the regional council.

I have recently turned down several applications for expansion of proprietary facilities and have negotiated three programs that were artially underway into a smaller expansion. The hole proprietary hospital building situation in ew York City is tending to stabilize. However, outside of New York City, where I have no authority, the problem is that of the State Board of Social Welfare, where the proprietary building situation really presents a gloomy picture as far as those of us associated now with Blue Cross are concerned.

We also took a look at what kinds of hospitals are used and paid for through Blue Cross. As a result, we drew attention to the fact that in the particular year under study, 1958, something like $23 million went to unaccredited hospitals and, of this, 70 percent went to unaccredited proprietary hospitals. We recommended that Blue Cross adopt a policy of not paying proprietary hospitals if they are not accredited after 3 years. Blue Cross thus far has adopted a policy of not accepting any new member hospitals who do not become accredited as soon as they are eligible to do so.

After I became Commissioner, the Board of Hospitals, of which I am chairman, passed a resolution requiring proprietary hospitals to become accredited within 3 years as a condition of being relicensed. Since then, quite a few have become accredited.

Now, in the meantime, I had long since used up that $150,000 and we had to bring together other funds and studies, plus a great deal of contributed services from Blue Cross, Blue Shield, GHI, HIP, doctors, and others, to finish our contractual obligations. We brought out a second and final report dealing with the medical and dental care plans. This report is not as complete as we would like it to be. There were limits as to how long we could stay afloat and still attempt to balance the deficit accounts as a result of this last book, but it certainly was worth it.

In this particualr study we again got into some of the areas touched on today in techniques which have the same basic premise, that of peer judgment. The question is, how do you get the peer judgment? How do you analyze it and then report it?

Household Survey

One of the studies that we undertook for labor-management groups was also published in this report. The Teamsters Joint Council No. 16 and Management Hospitalization Trust Fund had

retained us to do a household survey study and medical audit. They wanted a sample of 100 percent hospitalized patients, so we asked Blue Cross to give us a sample of people from some 21 locals. This is a very large population, well over 100,000 people, who had in a 6-month period a hospital bill paid for a stated number of conditions.

This work was done by surveyors in the New York City area who had been doing this kind of work for a great number of years and were experienced in medical auditing. The work was directed by Dr. Morehead, who previously had been the director of the quality studies for HIP. Most of her surveyors in this study were people who had been working with her for 8 or 9 years and had surveyed every specialty within HIP. Thus, we were dealing with seasoned researchers who had been through the mill. Little of that has ever been published because the groups have voted it down each time it was ready for publication. However, I think most of you have seen some of the data which came out of that study.

The estimates for these selected diagnostic categories cannot be generalized to all of New York City but can be generalized to that large group of teamster families. There was a substantial amount of surgery for which there was no indication. For example, in 60 consecutive hysterectomies 20 were deemed to be unnecessary. For most, a dilation and curettage (D and C) and Pap smear would have been preferred before the hysterectomies were done.

One patient had a labial cyst which could have been examined and dealt with under general anethesia. However, the surgeon proceeded to remove a perfectly normal uterus with absolutely no indication.

Another doctor, in order to live up to the consultation requirements of the Joint Commission for his own hospital, had a consultant see the patient. He indicated that no surgery was necessary, that a D and C and a Pap smear was indicated at this time. Nevertheless the surgeon went ahead and did the hysterectomy.

We are well aware that if some 60 consecutive hysterectomies are reviewed by several different physicians, there will be some differences. What has never been illuminated in this field is how wide a range will occur in a group of surveyors who have had some orientation as to the nature of the work which they are being asked to do, who are supervised to be sure that the forms which they are expected to complete are completed. Our surveyors not only are requested to fill out a standard list of questions or "no" answers, but they are also given an opportunity to write an essay on the case.

Our next effort in this field is to move into the broad area of intersurveyor differences. We are working with the State Medical Society and the State Health Department across the State of New York in various medical centers in an effort not only to illuminate this problem of interviewer differences, looking at identical records, but also to stimulate the interest of physicians in medical auditing in several upstate centers as well as in New York. The Teamsters group referred to earlier are going to pay for this work. They were so interested in the results of the study of their own members that they have asked us to go on monitoring their medical care. In addition, they are willing to support our research in this field.

Another utilization study which was based on available data was a study of 400,000 surgical claims paid for by either Blue Shield or Group Health Insurance, or which were provided under the HIP system. In this case, we had a stratified and representative sample of all the surgery in New York State during the defined period of time paid for by the three plans. We had the name of the doctor, the name of the hospital, and the procedure performed and we looked up the sponsorship and professional standing of hospitals. We also looked up the training of doctors and then did a variety of analyses.

Briefly, as an example and sticking to my New York City situation, one finds a range from a hospital where 90 percent or more of the surgery is done by physicians whose qualifications are recorded, namely board-certified or members of the College, down to one proprietary hospital which is currently licensed and where only 5 percent of the surgery is done by doctors who have these qualifications.

Another study which we did in the area of quality of medical care, I am going to ask Dr. Elinson to talk about. This study, which we thought would be useful in guiding people who seek advice as to what kind of doctors and hospitals to go to, undertook to find out what doctors do for themselves or their families. It covered the New Jersey State Medical Society membership and is a very revealing study. It shows some

sharp discrepancies between what physicians do for themselves and their families and what they do for patients in the community at large.

The reaction to release of these studies has been quite marked. The release of the report was under the control of the superintendent of insurance, who put it out accidentally 2 days before he had copies available for other people. However, it went to the press and he held a press conference. Consequently, everybody became terribly upset because they could not get their hands on the report and could not comment.

Four county medical society presidents thus far have publicly attacked me without reading this report. This is a real testimony to their scientific acumen to be able to criticize a 311-page report without reading it. Since then one has been attacking me after reading it, but the critiques are just as subjective.

I think that when this all simmers down it will be well-known that I favor the best in medicine and that as Commissioner of Hospitals I have not only a professional responsibility but a City Charter responsibility to deal with the standards of care in those institutions under my jurisdiction. As Mr. Bugbee said, we have some very strenuous efforts underway in New York City to upgrade hospital care at least in two systems: proprietary hospitals and municipal hospitals.

Puerto Rican Study

Another major effort in which we became involved several years ago grew out of the concern of the Governor of Puerto Rico with the medical care situation there. He was receiving an increasing number of complaints from newly emerging middle class Puerto Ricans about the medical care problems they faced. As a result, we were commissioned by legislative action to do a 3-year study at a cost to the Commonwealth of $300,000. This was an all-inclusive set of studies: I will allude to two things we did in connection with utilization.

One of them was an island-wide household survey. There are certain answers you can only get by including a survey of the community. Otherwise you never know what their out-of-pocket costs are, how much care they get, where they get it, from whom they get it, or what their attitudes are. Therefore, we did a household interview survey of almost 3,000 families.

At that time, 1958, 90 percent of the hospital care in Puerto Rico and two-thirds of the ambulatory services were either provided directly by the Government or paid for by the Government. With this kind of picture and the fact that Blue Cross had been in existence for 12 years and still was only covering 5 percent of the population, one could not be very sanguine about waiting for the voluntary approach in this particular part of the United States to deal with the very severe problems which turned up in a medical audit undertaken for us by a team of Puerto Rican specialists. The then President of the Puerto Rican Medical Society, who is a well-qualified internist, headed up the team.

The interest of industry and labor in the medical care field led to a Foundation on Employee Health, Medical Care, and Welfare. Dr. Williams has been conducting a large study for this Foundation for several years. First, a pilot study was done in the New York area of a sample of District No. 15 machinists. She started with just a representative sample of those people within a defined area and attempted to find out what kind of coverage they had, and then to take in all the other elements we wanted information about. This presented quite a problem, and she switched her research plan for the larger study, which has recently been released, to people with known coverage. She will tell you about it after I get through.

Other Research Activities

We did another study for the hotel industry in New York, which has never been published because they have made a commitment to us to let us restudy their employee families after their new program has evolved. The hotel industry had negotiated with the labor union a new fund for the coverage of dependents and spouses. The president of the labor union did not want to take advantage of any of the existing health insurance coverages or schemes in New York City. Therefore, we did a household interview study of about 300 families and came up with results that are fre-

quently found in New York City, namely, that for people who have health insurance, about 25 percent of the hospitalizations are in nonaccredited proprietary hospitals; 25 percent of the doctors that people think are specialists, are general practitioners, etc. They were so disgruntled with the profile of care presented as a result of this survey that they made a policy decision to go into their own full-time group practice. This group practice now has the first of 10 units open and operating. The doctors are all on a full-time salaried basis and they have a very interesting provision in their contract, namely, that 25 percent of their time is made available to the hospital or medical school with which they are affiliated for research, teaching, or service. This was a policy decision made in an effort to keep the doctors up to date as the years go by.

Now, to go back to the Teamsters for just a moment. The outcome of the course which we put on for them about hospitals and the household survey we did, which indicated the kind of hospitals and doctors they were going to, led them to realize that their problems are indeed those of the community. They now are going to spend their time and money supporting research, attempting to do things for their own membership through existing community resources, supporting medical auditing, member education, and community-oriented developments. They may even support a hospital research center.

At Montefiore Hospital, in cooperation with our School, a Teamster Center has been opened where they can refer anybody whose problems are not resolved. The people who come here are those who have not been able to solve their problems in any other way. Out of the first 50 individuals who walked into this center, four were found to have the following conditions: One had active TB, one had leukemia undiagnosed, and two had cancer of the rectum undiagnosed. All had "good" insurance coverage and were under active medical care. The result of this is that the Teamsters are convinced their members have some real problems, and they are sending people at a faster and faster rate.

I would now like to mention a few more research activities having to do with hospital use. In New York City we have a Health Research Council, which is a municipally supported version of the National Institutes of Health. One of their priority areas is medical care. At Columbia we are fortunate in having a team headed by Professor Van Dyke, whose team is doing a series of studies of medical care provided by the city. One is a study of long-stay patients done at my request to help me explain some the problems to the Budget Director and the Mayor. They have just completed a study of patients who have been in a sample of voluntary hospitals and a sample of municipal hospitals for 30 days or longer.

In that category of patients, for example, in the municipal hospitals, 50 percent of the patients were judged by an outside team of internists, social workers, and nurses not to be in need of general hospital care. Some could go home, and others could go to foster homes, to home care, or to nursing homes. This study has identified a whole series of problems which confront me and the City administration in dealing with this kind of patient.

For example, we are closing up substandard nursing homes faster than building new nursing home beds. We do not have enough social workers. Also, not all doctors are interested in following through on discharge plans for their patients. The administration becomes so used to an individual that sometimes you will find a patient who has been there for 2 years and has become sort of a pet of the staff. Also, even in the voluntary hospitals, which have a great deal more flexibility regarding which patients they take or do not take, 26 percent of the long-stay patients did not need to be in an acute general hospital.

Mr. Van Dyke and his team are now doing a study of what we call the Charitable Institution budget populations. They are starting with the Blue Cross 1-day census study in which the municipal hospitals participated as well as the voluntary and proprietary hospitals. Indigent and medically indigent patients are paid for on my authorization from the Charitable Institutions Budget at a rate of $30 a day. This totals $55 million a year that we are paying to voluntary hospitals. We anticipate that we will find some very interesting things as to length of stay and about people being in the right and wrong hospital.

Our point of departure, as I said, is the Blue Cross one-day census, where we have this across-the-board listing of every patient in every hospital in New York on a given date. The team and Blue Cross have gone back and completed the length of stay data on every patient that we are concerned with in all hospitals. They are now in the process of looking up all the factors as to length of

stay—the kind of doctor who took care of them and also whether they were on approved services or unapproved services. I think that out of this will come a number of very interesting policy decisions. You know, you find some interesting things when you do research. For example, in the long-stay studies we did notify the hospitals on Friday that we were coming on Monday to study long-stay patients. On Sunday one discharged seven long-stay patients.

Finally, Dr. Elinson is in charge, in the Washington Heights area where our school is located, of a master sample. He has 6,000 households representing a large area of the city from which he can draw any kind of sample that may be needed and he is helping with a parallel development in Puerto Rico. I would like to have him speak further about that and how he ties in a variety of studies, including some interested in medical care.

He has also been directing a study of the use of dental assistants, and helping with a study of overhead in group practice versus solo practice.

DR. JACK ELINSON:

I should like to touch briefly on selected aspects of three of the studies that Dr. Trussel mentioned. One study has to do with how New Jersey physicians choose medical and hospital care for themselves and their families. The second study has to do with a household survey of medical care in Puerto Rico. The third study has to do with a community health survey in a highly urban area (the Master Sample Survey in the Washington Heights Health District of New York City).

A common thread that appears to run through each of these studies is that the pattern of medical and hospital care obtained is (quite apart from the question of "needs for care") a function of social group membership—occupational, socioeconomic, or even religious.

New Jersey Physician Study

The New Jersey study of physicians is one of a class of studies bearing on the subject of the quality of medical care. Studies of the quality of medical care are of three types. We have heard today mainly about two. One type depends upon ratings of professional performance. These ratings may be very global or very specific. Dr. Peterson's studies in North Carolina and at Harvard are prime examples of both global and specific ratings. The ratings are of physicans' performance; and the ratings are made by physicians, using more or less objective criteria. Nevertheless they are ratings of performance which may be interpreted as measuring or reflecting the quality of medical care.

Another type of study uses the professional characteristics of physicians and hospitals as yardsticks of the quality of care. Dr. Trussell described this type of study. Physicians are characterized in terms of such matters as whether they are board-qualified or not; hospitals are described in such terms as whether they are teaching hospitals or not, accredited or not. There is an underlying assumption in this type of study of a hierarchy of professional characteristics presumed to be related to quality of care.

A third type of study, which has been touched on here only to allude to the fact that it is extremely difficult to do and has not often been done, is what may well be called the "so-what" study. "So-what" that medical care is provided by Peterson's physicians whose performance is rated as being in accord with the currently accepted practices of medicine? "So-what" that medical care is delivered by Trussell's qualified specialists in accredited teaching hospitals? Should not the question be: What do medical care and hospital care—however they may be rated and whatever their professional character may be—do for patients? Paul Densen is among those who have pointed out that "so-what" studies are not done because no one has figured out a way to link a particular pattern or quality of care with the health status of a patient and his social functioning. The pioneering studies that Densen and Shapiro have carried out, utilizing special population groups matched on various characteristics but receiving care under different social arrangements, represent an attempt to approximate the conditions of more rigorously controlled studies.

The Columbia study of physicians in New Jersey is still another kind. Again, it is not a "so-what" study. It is, rather, a study of the behavior of connoisseurs of medical care. It asks what physicians do in a real situation, when they are

confronted with a decision about choosing medical care for themselves and their families. What do *physicians* do? What kind of physicians do physicians use? What kind of hospitals do they go to? The study is not a "so-what" study—it does not determine whether physicians and their families are better off with respect to health status than other segments of the population who may be presumed to be less knowledgeable about medical care but comparable in other respects, such as education and socioeconomic position.

A probability sample of some 500 physicians in New Jersey was interviewed to find out what physicians and hospitals they used. The characteristics of the physicians actually used were established primarily on the basis of replies to a mail questionnaire to them. I will not go into a long series of findings on that study (part of which has been published), but I would like to call your attention to just one or two that are pertinent to this meeting.

One finding from the New Jersey physicians' study has to do with surgery. You may be familiar with the position of the American Academy of General Practice with respect to which physicians are qualified to do surgery. In the New Jersey study, no member of the Academy of General Practice was used by *physicians* for surgery. In point of fact, no general practitioner of any sort was used for surgery for physicians or for any member of their families. No member of the Academy of General Practice used any other member of the Academy of General Practice for surgery for himself or family.

With respect to choice of hospital for major elective surgery, physicians tended to leave their home state (New Jersey) and go to places they were familiar with primarily by reputation rather than personal acquaintance, such as university teaching hospitals in the largest cities within commuting distance—New York, Philadelphia, or Boston. For minor conditions and for emergency situations, they were more likely to use local community hospitals.

In the course of the interview, the New Jersey physicians were asked whether they thought the method of payment of physicians had anything to do with the quality of care and whether they preferred for themselves personal physicians who were paid on a fee-for-service basis or on a salary basis.

With respect to their opinion as to relationship between method of payment and quality of medical care, about 8 out of 10 physicians expressed the opinion that physicians paid by fee-for-service were likely to provide better quality medical care than physicians who were on salary. With respect to their own choice of personal physician, however, only 4 out of 10 preferred a fee-for-service physician. So much, for the present, for the study of New Jersey doctors.

Nonmedical Factors

Now, with respect to the Puerto Rican study, an islandwide household survey of 2,950 families, I would just like to mention a few findings on the relation between nonmedical, social-group membership factors and patterns of utilization of medical care. I refer particularly to socioeconomic class. Without defining them precisely here, we may consider three broad classes of people in Puerto Rico: the "poor," the "middle class," and the "rich." For all three classes, the frequency of use of physicians in a specified period immediately preceding the interview was precisely the same—2.3, 2.4, and 2.2 percent. But the *pattern* of use—where the physician was seen, for example—is quite different for the three groups.

The physician was seen inside his office by 5 percent of the poor; by 10 percent of the middle class, and by 15 percent of the rich. Conversely, 15 percent of the poor visited physicians in public clinics or health centers, as did 9 percent of the middle class and 3 percent of the rich. (Economic status is apparently not routinely checked when people present themselves at public health centers.) Visits to the patient's home by the physician: for the poor, 0.8 percent; for the middle class, 1.4 percent; and for the rich, 5.5 percent.

There were similar findings with respect to types of hospitals where people stayed. Among the poor, 22 percent stayed at a private hospital as compared with 50 percent of the middle class and 82 percent of the rich. The poor experienced a little less surgery than the other two classes.

Consultations with nonmedical personnel with respect to illness: 32 percent of the poor consulted a spiritualist, as did 21 percent of the middle class and 5 percent of the rich.

Washington Heights Study

Now, may we move from Puerto Rico to the Washington Heights Health District in New York City, a move which some Puerto Ricans have also made. About 10 percent of the Washington Heights population is Puerto Rican. The Washington Heights Health District is to be found at the upper end of Manhattan Island and contains over a quarter of a million population. Columbia Presbyterian Medical Center sits in the middle of this District.

One of our graduate students, Sherwin Goodblatt, took a look at the utilization of the various kinds of hospitals by the people in Washington Heights who were hospitalized during the year prior to interview. He found, in a sample survey, that only about one-fourth of the hospitalized persons used the Columbia Presbyterian Medical Center, reputed to be one of the best hospitals in the City; one-fourth used other hospitals in the District; and about half of the population went outside the District. In other words, it was clear that many people living in the Washington Heights area—an area that happens to have a world-renowned hospital—went elsewhere for their hospitalization.

Goodblatt also looked at the relationship between a person's religion and the hospital he used and found that government hospitals, primarily the municipal hospitals, were used more by Protestants than by Catholics or Jews. Thirty-nine percent of the hospitalized Protestants, 15 percent of the hospitalized Catholics, and 11 percent of the hospitalized Jews used municipal hospitals.

The Jews in Washington Heights were more likely than other religious groups to patronize proprietary hospitals: here we have a figure of 13 percent for the Jews, 4 percent for the Catholics, and 2 percent for the Protestants.

Now, in Washington Heights it so happens that many of the Protestants are Negroes, and that half of them use government hospitals which are accredited. In contrast, only 34 percent of the whites used accredited hospitals.

Well, this seems like a disparate set of findings from three different studies, but I wonder if there isn't some patterning to be seen here. In each of the areas—New Jersey, Puerto Rico, and Washington Heights—it is clear there are very powerful nonmedical social forces, i.e., indexed by membership in social groups, which may have to be taken account of somehow in whatever planning is done. Attempting to shore up situations of this sort with seemingly rational schemes, in the midst of such rapidly flowing social forces, presents some really tough problems.

Finally, and simply, to repeat what I said at the outset, none of these studies that we have heard about so far here, including the ones I have talked about, have shown a relationship between patterns of medical care and the health status and social functioning of the population. None addresses itself directly to the "so-what" question: What do different ways of delivering medical and hospital care mean in terms of the ability of people to live, work, play, and be healthy? It remains a challenge to try to develop research along such lines.

Family Medical Care Survey

DR. JOSEPHINE J. WILLIAMS:

The study which I am going to tell you about is called "Family Medical Care Under Three Types of Health Insurance." The report was recently published by the Foundation on Employee Health, Medical Care, and Welfare,* which, as Dr. Trussell indicated, is a joint effort by management and labor. The International Association of Machinists is the union sponsor of the Foundation; the management sponsor is U.S. Industries, Inc.

The study was done at the School of Public Health and Administrative Medicine, Columbia University, with the cooperation of the National Opinion Research Center of the University of Chicago. We wanted to compare the utilization of medical care and the cost of medical care, under three important types of health insurance. We wanted to find out whether families used the same amount and kind of medical care under the three plans and how their out-of-pocket expenditure compared.

The survey dealt with three particular plans, each of which was considered a good one of its kind. The first was New Jersey Blue Cross-Blue Shield which, as you know, is basically an in-hospital service-benefit plan. The second was the

*477 Madison Avenue, New York 22, N.Y.

General Electric major medical plan, a very comprehensive plan. The deductible is either $25 or $50 per person per year. The coverage is unusually broad. For instance, psychiatric care is covered. The third was the Kaiser Foundation Health Plan, with which you are all familiar. It is a prepaid group practice plan, serving a number of communities on the West Coast. Our survey of the Kaiser Plan was limited to the San Francisco Bay area.

I shall now take a few moments to sketch the survey design. For each plan, we started with a population of men who met three criteria—they lived in specified locations; they belonged to certain unions; and each man had had continuous coverage throughout the year 1958, both for himself and for any eligible dependents. The samples for New Jersey Blue Cross-Blue Shield and the General Electric Plan were both drawn from members of the International Association of Machinists, but we were not able to use the same union for the Kaiser Plan. Our sample of Kaiser Plan subscribers was drawn from a population of all the blue-collar unions in the San Francisco Bay area which had secured Kaiser Plan coverage through negotiations. This population included large groups of longshoremen and warehousemen; restaurant and tavern workers were another large group. In all, some 14 unions were represented.

A probability sample of approximately 800 men was drawn for each plan. The samples were stratified by the age of the man; so that a quarter of the men were under age 35, another quarter were 35 to 45 years, and so forth. We began with a household survey. (I shall mention our other sources of data in a moment.) With the help of the National Opinion Research Center, a response rate of some 93 percent was secured for the two samples drawn from our friends, the Machinists; the response rate for the Kaiser Plan sample was 88 percent. Thus the samples actually obtained ran around 700 to 750 families for each plan, or something over 2,000 individuals per plan. What that size means depends, of course, on whether you are thinking in terms of the cost of research which involves personal interviews in men's homes or in terms of the sampling error in, say, hospital admission rates.

It turned out that the samples were well-matched on both age and sex for all family members, although the stratification was only for the men's age.

Turning now to the sources of data, I have already mentioned the survey interviews. NORC interviewers inquired in detail about the family's utilization of medical care in 1958 and the cost of their medical care, among other things. When the families reported that some member had been in a hospital, we wrote to the hospital to confirm the date of admission, the length of stay, and the hospital's charges. These hospital records were the second main source of data. The third was the carriers' records. New Jersey Blue Cross-Blue Shield checked their records for every hospitalization that had been reported in the family interview. The Metropolitan Life Insurance Company, which is the carrier for the General Electric Plan, did an even more thorough check. They did not limit their validation to claims that had been reported by interview. They searched their files for claims by every person in the sample. This "two-way" check picked up half a dozen hospitalizations not mentioned in the interviews.

In summary, the strengths of the survey design were: first, that it covered types of medical care and expenditures which can only be obtained by personal interviews with subscribers. For instance, we were able to find out the extent to which members of the Kaiser Plan went outside the plan for their medical care. Second, many of the data were validated. Third, the age and sex distributions of all three samples were very similar.

Two limitations of the survey design should also be borne in mind, particularly with reference to the findings on hospital utilization, which are the only ones I shall report today. First, samples of 750 families per plan, or about 2,000 family members per plan are not large for studies of admission rates or length of stay. This means that we have to allow for a large sampling error in such variables. Second, we decided to study intrinsically important plans, even though they operated in different parts of the country. This involved a very difficult methodological problem. Regional differences are confounded in our results with the differences between types of insurance. We did what we could to circumvent this difficulty, but I shall not attempt to discuss these technicalities today.

Our main finding on hospital utilization is easy to state: Considering the sampling variabil-

ity, we found no evidence of any difference in hospital utilization between the three plans—that is, the rates were essentially the same for our three matched samples.

Our basic unit is the hospital stay, which is not quite the same as an admission. Stays include the 1958 part of a hospitalization which began in 1957 and continued in 1958, as well as the 1958 part of admissions which extended into 1959. This choice of unit does not make any difference in our main conclusion. We were interested in stays in short-term hospitals, excluding obstetrical stays and also stays under Workmen's Compensation or at public expense. Thus, our unit was the non-obstetrical stay in a short-term hospital, aside from free care.

The number of such stays per 100 persons was 7.6 for the New Jersey Blue Cross-Blue Shield sample, 7.1 for the General Electric sample, and 7.9 for the Kaiser Plan sample. I emphasize again that these differences are not statistically significant.

The number of days of care per 100 persons (again I am reporting non-obstetrical cases in short-term hospitals, excluding free care), was practically identical for the three plans—58 days per 100 persons for the New Jersey Blue Cross-Blue Shield, 61 for each of the other samples. Thus we failed to establish any difference in hospital utilization, although some other studies have found lower admission rates under the Health Insurance Plan of Greater New York, which is a prepaid group practice plan somewhat similar to the Kaiser Plan. We did not prove that the rates for the three plans studied were identical; rather, we failed to find the anticipated difference.

Let me mention briefly two other findings which may interest you. First, the admission rates for children did turn out to be lower under the Kaiser Plan than under either of the other plans. This seems to be explained by a lower admission rate for tonsillectomies. This finding is based on relatively small numbers, approximately 900 children per plan, but it is interesting because it agrees with the studies of the Health Insurance Plan of Greater New York.

Finally, members of the Kaiser Plan obtained about 92 percent of their hospital care (aside from free care) through their plan, and went outside the Kaiser Plan for the other 8 percent.

DISCUSSION

THE CHAIRMAN:

Are there questions?

DR. PAYNE:

I wonder if some of the criticism aimed at the report by Dr. Trussell regarding the Teamsters in New York might not have been avoided if individual judgment by a physician, regardless of competence, had been replaced by a group judgment of physicians who published their criteria for the decision as to whether the admission was appropriate or not, the length of stay was appropriate or not, or the quality of the care was adequate. Quality of care, especially, is a very touchy subject and needs to be established, not by one physician but by groups of physicians.

I also have a question. Your assumption is that the patients who are admitted on Friday stay longer of necessity because they cannot receive laboratory tests until the following Monday. Is this an assumption or is it backed up by fact?

DR. TRUSSELL:

Well, to answer your first question, we are just as interested in group decisions as you are. The conditions selected for auditing were chosen because there are fairly available criteria in the field. If you look at our report, you will find that we tried to mention only the fairly larger numbers of patients and that we were giving the other data as illustrative. This report was written for a lay board of trustees and is not a technical document. We are into the technical work now where we are going to have photostatic copies of hospital records reviewed by surveyors in different parts of the State independently. I don't think these particular studies, frankly, would have been grossly different in their conclusions if we had a group of surgeons looking at these records. We worked from the photostatic copies of the hospital record. We do not send people—medical students or lay people or nurses or what have you—out to the hospital to abstract the record. We get a written consent from the patient. There is a reliable firm in New York City that works with the greater New York Hospital Association, which picks up the records, takes them to the central office, photostats them, and returns them to the hospital within 24 hours. Therefore, the physi-

cian doing the evaluation has the original medical record in toto. One of these ran over 600 pages and we did the whole 600 pages. We are afraid that abstracting can lose some bits of information, such as nurses' notes, which are very important.

We agree that for research purposes now, we would like to have group judgments, but we want to study the group judgment. Further, we feel that what we have been doing is an experimental approach, and there is no question that it requires refinement.

As far as medical reaction to this report is concerned, I don't think it would have been any different no matter under what auspices or what circumstances it was released. After all, these kinds of reports have been coming out for many years. The American College of Surgery reports, the fairly recent article in the AMA Journal about unnecessary gynecological surgery are two, for example. This just happened to get a very high component of publicity, and what made the local physician irritated was my statement that some of the problems of medical care in New York State were worse in New York City and that the New York physicians were not doing anything about it. They retaliated by saying that they do have grievence committees to which people can come with their problems.

In connection with your other comment, there is no question but that we will get a partial shut-down on weekends, particularly in large hospitals. You can only get emergency surgery over the weekend. You can only get emergency laboratory and X-ray facilities on Saturday afternoons through Sunday night. In our Blue Cross studies, we came upon one poster on the bulletin board of a doctor's staff room in one voluntary hospital that said, "Doctors, if you can raise the occupancy rate of this hospital 3 percent, we will break even. Please check your lists."

I happen to know of at least one hospital in New York City where, if a bed opens up on Friday for a patient who is scheduled to come in on Monday, the doctor is called up and told to get his patient into that bed. There is just no question about it; voluntary hospitals are constantly in need of more money and so they maintain as high an occupancy as they can. As Commissioner of Hospitals I occasionally get letters from a hospital saying, in effect, "Dear Commissioner, our census is very low, would you mind filling us up?"

We have had, at our Columbia Presbyterian Medical Center, a committee studying the 7-day week, and they came to the conclusion that a 7-day work week was impractical for that center because, among other things, there would probably not be enough personnel to operate on that schedule. However, they did get considerable improvement in availability of laboratory services and X-ray on weekends and scheduling of operations on Saturday morning. These are only illustrations of a few problems which research and administration working together can help resolve.

WEDNESDAY MORNING SESSION
January 23, 1963

The meeting was called to order at 9:00 a.m., Mr. Bugbee presiding.

THE CHAIRMAN:

I am going to introduce the panel and ask them, as listed, to make such comments as they think are indicated. Then I hope there will be questions from the floor and among the panelists.

You have the stated objective of the panel. I think it is not an easy assignment for these five men, nor did I gather that they thought so. On the other hand, they will come to grips with problems and methods for research in this area, study methods, as they are able.

Most of you know the group and, again, I won't go into any extensive introductions. Dr. Lester Breslow, whom you all know, carried on a great deal of research in the Department of Health at Berkeley. He is responsible for the test work on the health survey in California that preceded our national study. Also, every time I see Lester, he has various other interesting research projects which go beyond the bureau of chronic diseases in their broad interest.

Jacob Feldman has been the keystone of the National Opinion Research Center for years. It has been a pleasure for the staff of HIF to work with that agency and with Jack, a sociologist, who is indeed a very experienced individual in survey research and research generally in the health field.

Victor Fuchs is an economist. For some time he was working with the Ford Foundation reviewing the health field from the standpoint of economics. He is presently program consultant in economic development and administration for the Foundation and is a member of the staff of the National Bureau of Economic Research. He has been on the faculty of both Columbia and New York Universities.

Don Riedel was on the platform yesterday. He has just taken the job as Director of Research and Planning for Blue Cross, coming from the faculty and research group in the Graduate School of Business at Michigan and the program on hospital administration there.

John Thompson, director of the program at Yale, has been doing research within the hospital at New Haven for a number of years. He is an experienced individual in both research and hospital administration.

With that very brief introduction, Lester, do you want to start off with such comments as you care to make?

The Need for a Multidisciplined Approach

DR. BRESLOW:

I would like to spend my few moments here on the problem of the validity criterion. There was some discussion of it yesterday, and it seems to be worth more attention. Three categories of validity criterion are being used, or at least talked about, in hospital utilization studies.

One might be called the "normative" criteria—that is, determining the usual practice: how many days patients stay in for delivery, how many days for an appendectomy, etc. This type of criterion does have some uses. We are using it right now in the development of a hospital service index for county hospitals in California, where we have been asked to take a look at standards and

quality of care. We are ascertaining the extent to which various county hospitals have particular services, such as a pharmacy or pathologic service, and we are giving an arbitrary weight to each of these services. Out of more than 100 such items we have built an index with a maximum total score of 1,000 points. The approach is that of determining usual practice.

The second criterion received most of the attention yesterday and usually does because it is regarded as a better criterion. It is based on expert opinion or peer judgment. Typically, a review of actual procedures is conducted by some expert person or group to determine whether they were justified or were properly done. For example, an expert group of physicians may look over the records of practice and determine if things were properly done, if they came up to a standard of expertness. Work along this line is underway in several places at the present time, well exemplified by the studies of Trussel and others of the Columbia School of Public Health and Medical Administration.

Both of the above types of criteria are useful. However, it seems to me that we ought to get down to the third, that is the "so-what" criterion. When Dr. McNinch was making the introductory remarks yesterday, you will recall, he compared what Americans spent for automobiles and some other things with what they spent for medical services. A cynic would have responded, "Yes, but automobiles will get you somewhere—where will hospitals get you?" That is really the question. Therefore I think that we ought to look at this ultimate or "so-what" criterion.

Jack Elinson yesterday indicated that this type of criterion had not been used. He expressed some doubt as to whether it could be used. I would like to take issue with that point of view. It seems to me that this criterion, which may be called the criterion of effectiveness or the criterion of end-results, can be and is already used in a very limited and tentative kind of way. I would like to give you two brief examples.

One is in the tumor registry system in California, for example, where hospitals report not only the beginning data about a case treated for cancer, but the long-term followup data. We have just completed an analysis of 110,000 cases extending back over a period of about 20 years to find out how long patients with various personal characteristics, various types of cancers, and various kinds of treatments survived. One analysis was a comparison of the experience of patients who are treated in county hospitals (our public hospitals corresponding to the municipal hospitals in the East) with experience of patients in voluntary hospitals. Patients in the voluntary hospitals did much better, measured by the criterion of survival which is the accepted index of effectiveness of care for cancer patients. Patients treated in private hospitals survive longer than do the patients treated in the public hospitals.

Many of you will immediately think of several possible explanations for this finding: different age of patients, different sites of cancer, and different degrees of advancement of the cancer.

We took into account as carefully as we could all these factors, by examining age-specific groups, several individual sites, and only localized cases for the particular sites.

Still we found that the county hospital patients with localized cancer, at the end of 5 years, have substantially lower survival than do patients in the private hospital, 38 percent as compared to 59 percent. This makes it difficult to escape the idea that the finding has something to do with quality of hospital service. It may be that the patients do not "accept" the treatment or do not follow through with it. There are a lot of possible explanations. However, it seems to me that survival of cancer patients illustrates the kind of criterion that we ought to be utilizing more and more in studies of hospital work. What we really want to know is what is being accomplished, the end-results.

Just one other brief example. The Kaiser Foundation Health Plan is now carying out a study of the effectiveness of a multiphasic health checkup, a battery of laboratory and physiologic tests combined with medical followup. It has been alleged that if people have this type of preventive medical service they will live longer. There is some evidence in this direction, but it is not very convincing. The Kaiser people are making a real study of this by selecting a sample of their subscribers to receive the test. They are making every effort to get them in for it. They will keep as controls a corresponding sample of their subscriber population. They will observe both groups over a period of several years to determine if there really is any difference in mortality, morbidity, and physiologic measurement following application of a multiphasing screening program.

These are the kinds of criteria—criteria of the effectiveness of the care—which, it seems to me, we ought to be introducing in our hospital utilization studies.

The Role of Economics

MR. VICTOR FUCHS:

George Bugbee has given me the "easy" assignment of telling you what economics can contribute to research on hospital utilization. I am afraid that to an audience consisting mostly of noneconomists I will only be able to open up the subject in the time available, and not answer all your questions.

In one sentence you can do this for economics. In fact, it has been done. You can summarize all of the lessons of economics in a six-word sentence—to maximize-equalize at the margin. The economists in the audience know what I mean. The rest of you probably do not, and it would take considerable time to explain what is meant by maximization, equalization, what it is that you equalize, and what is meant by the margin.

I do think economics has something to offer to the study of health and hospital problems. I think it has two things to offer.

First, economists have a set of concepts, tools of analysis, which are relevant to many hospital problems. The economists can suggest some f the questions that ought to be asked. They annot give the answers. The answers have to ome out of the health field itself. The economist can, however, help to frame the analysis and point it in the direction where the answers will be relevant to the problems confronting people in the health field.

I will give you a few examples of some of these concepts. For instance, in the area of costs, economists make various kinds of distinctions. They distinguish between fixed cost and variable cost. This can be very important in certain problems of analysis in hospital utilization.

They distinguish between average and marginal cost. Again this could be very important. Marginal cost is the incremental cost which is sustained in providing an additional unit of some particular type of service.

To illustrate—there are various costs attached to providing private, semi-private, and ward accommodations. Frequently hospitals will make an average cost calculation of the various types of accommodations and then may or may not use these average costs to set prices. Economists would probably question this procedure. They would ask—what is the incremental cost of providing semi-private as opposed to ward accommodation? What is the incremental cost of providing private as opposed to semi-private accommodations? Then they might suggest a different type of pricing procedure.

Another distinction made is between historical and alternative or opportunity costs. The economist is not content to say, "what did this cost you?"—in the sense of how much money did you pay out or what are you carrying it on the books at. You may be carrying it on the books at zero. It may have been a gift to the hospital. However, that doesn't mean you can use it as if it were a costless resource. Instead, the economist would suggest that you look at the alternative use of this resource—what other opportunities are available to you—what costs are foregone.

For example, in calculating the cost of medical education, economists would suggest that it is not enough to simply calculate the full cost of training a doctor in the sense of providing him with medical school and teaching and other facilities. They would say there are foregone costs in the sense that, if he were not studying medicine, he could be producing actively in society at that particular point in time. These foregone costs should be included in a proper calculation of cost of training a physician.

On the demand side, an important concept is the demand schedule—the fact that the demand for any good cannot be thought of in terms of a single point on a two-dimensional chart but instead, must be thought of in terms of a relationship between the price of whatever it is that is being offered and the quantity that would be demanded at various prices.

Along with this concept comes the one of elasticity—that is, how responsive is the quantity demanded to changes in the price and, similarly, how responsive would be the quantity supplied to changes in price? We hear a great deal of talk about a nursing shortage. Again, this is a word that the economist would use in quotation marks because the shortage concept is not a very rigorous

one from the point of view of economic analysis. Nevertheless, there is a presumption here that if higher wages were offered to nurses, more people would be attracted to the nursing profession. However, how much higher, and how large a response would there be on the supply side if the wages were increased? This is where the elasticity concept comes in.

Another concept is the notion of production function—the notion that you produce a service by a combination of various factors and that this combination is usually not a fixed one—that is, you can vary the proportions of the various factors. You can have more doctors and fewer nurses; more nurses and fewer doctors, or other combinations. And there is, given the prices that are prevailing for these various kinds of resources at a given time, a better combination and a poorer combination from the economic point of view.

Now, in addition to concepts and tools of analysis, I think economists can also bring to the hospital field experience gained in other industries. I know that some of you will immediately have reactions to the effect, "Well, hospitals are different—they are unlike every other industry." This is a normal reaction. I have never spoken to any industry group anywhere that did not have the same reaction—"My industry is unique"—and, to a certain extent, you are correct. However, my experience has been that, to a certain extent, if you believe that, you are wrong. Certain things have been learned in other industries which would have application to hospital problems.

Does the hospital have labor problems? Economists have been dealing with labor problems for years.

Does the hospital have problems of pricing? Economists have been dealing with pricing problems for years, and some of that experience—not all of it—will be applicable and helpful to hospitals in dealing with their own problems.

I would like to conclude with a word of caution, one that is not necessary, really, in this group but would be if I were speaking to a group of economists. Simply this—I very sincerely believe that, although economists have something to contribute to health problems and hospital problems, they must never become in any sense the masters or the controlling factor in the approach to these problems. The economists will need the guidance and cooperation of people who have training in the health field. He must always, in applying economic analysis, take into account that he is dealing with a vital type of professional service and be guided by the experience of doctors, nurses, hospital administrators, and other professional people.

The Survey as a Research Tool

MR. J. J. FELDMAN:

Even though this panel is described in the program as dealing with research methods, I find my position on it rather singular. It turns out that the other panel members were invited to participate as representatives of substantive disciplines—that is, they represent approaches to the interpretation of data. I am the only one who is supposed to represent a particular technique of data collection.

Sample surveys have been and no doubt will continue to be employed to provide grist for the respective mills of each of the substantive disciplines represented here. For many of the problems being discussed, there are obviously data collection techniques more appropriate than the sample survey. Nevertheless, I shall take it as my proper function to perform a partisan role. I shall try to point out some of the ways in which surveys might serve as useful adjuncts to other research techniques.

For instance, while record studies are frequently a more economic and reliable means of establishing relationships among certain variables, they give us very little idea of what processes are operating to produce the relationship. Paul Densen, in his paper yesterday, gave an example of how a survey can at least help discount an explanation of a relationship, even in instances where it does not itself provide an acceptable one. The record study had shown that the Dress Joint Board members who had chosen to be covered by HIP had lower hospital utilization rates than those who had chosen GHI. This is certainly a provocative finding but then the question immediately arises as to whether there was a self-selection process in operation. Are people who join HIP healthier than those joining GHI? Do the HIP members have different attitudes toward hospitalization and toward health in general?

Now, the HIP survey that had been conducted about the same time as the record study indicated that self-selection was probably not a serious problem. The two groups seemed to differ primarily with respect to their shop stewards' preferences rather than with respect to health attitudes or level of illness. Once it was established that the observed differences in utilization rates were not merely the spurious consequence of self-selection, the investigators were able to turn, in their search for an explanation, to factors like the mode of physician compensation, access to hospitals, the availability of diagnostic facilities within the group, etc.

Here is another example of how a survey might help us understand the processes underlying an observed relationship. We know from a number of studies that in areas with high bed-to-population ratios, there is a much higher level of hospital utilization than in areas with low bed-to-population ratios. Here again, the observed relationship is obviously a valid one but we do not have a precise picture of the mechanisms which bring it into being. Thus, it might very well be worth while to conduct surveys in areas of both types and perhaps, in addition, in areas where a change in the bed-to-population ratio appears imminent. How does an exogenous factor like the supply of beds get translated into adaptive actions on the part of physicians and patients? For instance, if one could find a situation where a rural hospital is about to close down, it would be valuable to determine exactly how physicians adjust to a decrease in the number of available beds. I don't think that these surveys would come up with any surprising new findings—they would simply give us a better understanding of the mechanisms through which the bed supply influences behavior. We might learn more about the alternatives to hospitalization by examining what people were doing prior to an expansion of hospital facilities and how they come to use the additional beds when they become available.

Yet another example of how surveys might further our understanding of underlying processes derives from the Peterson-Barsamian study discussed yesterday. Conceivably, the surgeons in question could have been asked why they in fact did not follow certain procedures. I don't know what would have come of this. The surgeons would obviously have been highly defensive. However, the investigators still might have arrived at a somewhat better understanding of what was going on. What were the mental processes accompanying the omission of the certain desirable procedures? To what extent was it a matter of not knowing any better? What situational factors acted as barriers to optimum performance? Again, the survey would be simply an adjunct, but it would give you some idea of what was producing the phenomena that were observed.

Another type of situation might be a study of some areas where there are very high occupancy rates, to determine what the hospital administrators and medical staff are doing that keeps the beds full.

The one other use of surveys which I shall mention is in the area of program evaluation. Surveys can perform an extremely important function by determining what is going on in experimental situations. In other words, surveys can sometimes tell us how people reacted to the stimulus that was introduced. For instance, let's say that a program to control hospital utilization is introduced into certain areas. There are review committees at the hospitals and there is a public relations campaign among physicians attempting to convince them that there are alternatives available—that hospitals should be used somewhat more sparingly than at present. Surveys of both physicians and patients could be quite useful. We could determine what new alternatives were employed in situations which would have previously resulted in hospitalization. Do patients become accustomed to high levels of utilization? How do they feel about having things more frequently done in the doctor's office? Do patients become aware of an elevation in the threshold of hospital admission and what is their reaction to it? How do the physicians react to outside "interference?" Such considerations might help explain why some programs don't work. I might cite as an example of this type of function for surveys the study of hospital regionalization by McNerney and Riedel.

I should like to conclude by saying that while I really do not see survey techniques as a panacea for hospital problems they can be quite useful adjuncts to experimental programs, to record studies, to medical audits, and to various other types of research procedures.

DR. D. C. RIEDEL:

Just before lunch yesterday, Jack and I were wondering who was going to play the role of sociologist. We finally decided that I was.

In commenting on methods which might be useful in research on hospital use, I would like to suggest one of the principal methods used by any discipline: the construction of a frame of reference for defining the components of a problem. Two problem areas were mentioned repeatedly yesterday, in which I believe the techniques of modern social research could produce some meaningful data.

The first problem area concerns evaluating the appropriateness of hospital use. A number of studies have focused on the same issue in a variety of ways and have come up with widely divergent estimates of faulty utilization. Certainly studies should be conducted to compare the results of the alternative methods, preferably on the same patient or patient records.

For example, there is a need for comparing the results of a review by individual physicians versus panels of physicians, using criteria constructed before the evaluation, as compared with not using any formal criteria. But it doesn't take a social scientist to make these comparisons. Where his skills would be useful would be in investigating the judgmental processes involved in arriving at a decision as to whether a patient received the care consistent with his condition. This point was mentioned by Dr. Jaco yesterday.

The group judgment process and its relationship to individual judgments is an interesting phenomenon in its own right and, certainly, worthy of study in connection with studies of hospital use. We could profitably borrow from the findings and armamentarium of tools of social-psychological research to shed light on the consequences of the different approaches to evaluating care. We know, for example, that the type and amount of leadership and authority exercised in group evaluation can radically affect the collective judgment. At both extremes, it could result in collective error or rally differing viewpoints to arrive at a more accurate estimate.

We experienced this leadership effect in our Michigan study, where one of the panel chairmen was an eminent person in his specialty and, although there were panel members who had different viewpoints, the leadership he exercised resulted in more stringent criteria for this particular diagnosis. Other panels were a little more permissive and provided a range of acceptable use to encompass that which is actually practiced. This difference in approach and the difference in composition of panels probably accounted for an unknown portion of the difference in estimates of inappropriate use by diagnosis, according to our data.

Now, we also know that group discussion leads, in many cases, to a modification of opinion. We were fortunate, a few months ago, to have Drs. Peterson and Barsamian in Ann Arbor to discuss possibilities of using the approach that they described yesterday on the data we collected in Michigan. During the visit we looked at a number of actual case abstracts to determine whether they were amenable to that approach. The discussion rapidly developed into a judgmental process with reference to the appropriateness of the admission.

I remember one case in particular, an appendicitis case, involving a young girl. They both agreed that this was certainly an unnecessary admission on the basis of the medical record alone. It was a case hospitalized in Dr. Payne's hospital by a colleague of his; when he pointed out the qualifications of this person they modified their viewpoint.

I cite this not to imply that the original decision or opinion was correct or incorrect or the revised opinion was correct or incorrect, but merely to illustrate that here is a vital area that needs some clarification. This is not only important for the interpretation of the differences in results from the various approaches, but also for the development of so-called optimum evaluation methods, and certainly, for the composition of utilization and audit committees.

One part of this problem area involves the question "from what sources do physicians construct the components of their own criteria, and what is the relative importance of each source?" For example, how important is the training in medical schools versus practical experience, versus

imitation of esteemed or influential colleagues? In the Michigan study, the largest single factor mentioned as explaining departure from the criteria was "physician's usual practice in such cases." Tom Fitzpatrick reported yesterday on the change in practice on the part of general practitioners with increasing years in practice, although specialists remained fairly similar over the years.

The second major area which concerns me a great deal was alluded to several times yesterday. This involves two basic approaches to measuring quality of care, the technique of administering care (e.g., such things as proper surgical technique, adequate physical examination, good history-taking) versus evaluating the end-result of the treatment process. Dr. Elinson mentioned that no one has really come up with a satisfactory method for this latter type of evaluation. This is true in most instances, although as Dr. Breslow pointed out, some specific procedures administered for some illnesses would be amenable to evaluation.

An important point to consider which, until recently, I thought was unnecessary or gratuitous to mention, is that in most situations there is an intervening variable involved—the patient. It is somewhat dangerous to simply correlate variations in specifics of administration of care with the degree of recovery. Obviously, the importance of his intervening variable fluctuates considerably according to the situation. For many illnesses, therapeutic advice assumes major importance in the treatment process. To measure the adequacy of this advice is one thing, but to comment on whether this advice, per se, had an effect on the well-being of the patient, without determining how the patient interpreted and followed through on the advice, is something else.

Very few studies have been done to determine the disparity between actual and perceived therapeutic advice, or on the factors influencing compliance with the advice. It may very well be that, in terms of wastage of our social resources, this area is just as important as studies of overuse of facilities. Time lost from work unnecessarily by recurrence of illness, and even death, could result from misinterpretation or deliberate noncompliance with the therapeutic advice.

I believe social scientists could contribute a great deal in this area.

Effect of Utilization Patterns on Bed Requirements

MR. JOHN THOMPSON:

What I am concerned about through all these discussions is the effect of various utilization patterns on bed requirements. I think this relationship is a basic determinant of hospital economics.

For example, somebody spoke about the fact that the average length of stay of maternity patients on the West Coast is considerably lower than it is in my part of the country, New England. Does this mean we need half the number of maternity beds per unit of population in California, or doesn't it mean exactly that?

In order to determine these kinds of relationships, we have been trying to develop at Yale (through U.S. Public Health Service grants) some simulation programs for various hospital subsystems. In other words, we are interested in attempting to duplicate certain activities of certain hospital subsystems on a computer.

We have started with one everybody seems to skirt in this discussion—that is, with the maternity service—and we did this deliberately, because there are not too many interfering factors. A woman is going to have a baby and, at the present time, there is no question of whether she should or should not be hospitalized for this event.

The only questionable hospitalization which can occur on a maternity service is for so-called "false labor." Until obstetricians can differentiate over a telephone whether labor is true or false, the only decision in most cases is to admit the patient and wait for developments. This practice does not interfere with the ability to simulate the maternity service—it is merely another subroutine in the program.

In certain hospitals studied, there are a great many so-called elective inductions. Does the factor of elective inductions make for more economic use of beds, or doesn't it?

We have isolated one basic fact—that one determinant of the percentage of occupancy, at least theoretically, seems to be the size of the obstetrical service. When we do production runs on the simulation program we find that the bed utilization flattens out at 4,000 births a year. Below 4,000, utilization starts to change in that more beds are required per 100 patients per year to pro-

vide the same level of service. Below 1,800 beds a year, the number of required beds per patient increases even more.

Computer Simulation, a Research Tool

We obtained these values through the methodology of computer simulation; then we checked them with actual operating data in Connecticut and found that the theory seemed to have validity. For example, there are 33 hospitals in Connecticut with maternity services. We divided these hospitals into three groups depending upon the size of the maternity services: one with services caring for 2,000 or more admissions a year; the second with services from 1,000 to 2,000, and the third with maternity services below 1,000 births a year. We found, in reviewing the data, that the largest group had an average occupancy of 70.6 percent, the middle group had an average occupancy of 59.9 percent, and the smallest service had an average occupancy of 43.6 percent. Subjecting this group experience to Fisher's Exact Test, we found these differences in occupancy to be statistically significant.

Is there a reflection in the "cost" resulting from this lower occupancy? We used as our criterion here the figure of direct cost of routine services; this figure would be free of different patterns of utilizing ancillary facilities. The direct cost of routine services per patient day for these three groups is $6.22 in the larger group—it rises to $6.97 in the middle group and to $10.55 in the small group. Theoretically, having a baby is fairly standardized procedure and should result in standard costs.

We did correlate these direct costs with the number of floor nursing hours and correlations were .95. We felt then that the figures reflected the actual personnel costs in a maternity service.

We then looked at the net gain or loss on maternity days for these hospitals, knowing full well that this is a very "dirty" figure which includes direct and indirect costs and overhead, counter-balanced with a very unrealistic pricing system. However, we were curious to find out if there is an effect on gain or loss per patient day, depending on the size of the service.

Again depending on the size of the unit, we found that the large hospitals, on the average, actually made $1.51 per patient day on the maternity service. The middle group lost $.86 per patient day, while the small group lost $7.87 per patient day on their maternity service. Therefore, we seemed to have isolated something that we feel is a basic economic fact—a relationship between the size of the service and the economics of the service.

It is quite possible that some of the effects of changing patterns of utilization mentioned here might or might not have an equally important effect on hospital economics.

The main purpose of computer simulation is the generation of predictive and analytical information. Thus, once we refine these programs, we may be able to predict the economic effects of various possible alternate decisions open to administrators in the operation of hospitals or to planners in the construction of hospitals of certain size, or of decisions made by doctors which dictate certain utilization patterns.

One of the things which really intrigues us is the possibility of a "5-day week" hospital. If we view the hospital as a mixed system whose input is partly random and partly scheduled, how can we play with the schedule so that most of the patient-care load can be taken care of in a 5-day week so that you might be able to shut down 40 or 50 percent of the hospital over the weekend. Again, we think we are going to be able to try this out on computers. We certainly would hate to build up a nice big 200-, 300-, or 400-bed hospital in order to experiment with this and then fall flat on our faces. We feel that predictive information from the computer is a far more desirable way of assessing the effect of these new utilization patterns.

DISCUSSION

DR. BRESLOW:

John's remarks were directed toward the question of efficiency of hospitals in an economic sense. We certainly need studies of this sort. However, I would like to go back to the initial point that he made, namely, that inpatient obstetric care on the West Coast is about half the number of days in New England. The question is, which is right, if either? Which is closer to being right?

I do not think we are going to get at this question by studying economic efficiency or even

by getting the testimony of experts in obstetrics. We must get to the question of what we are trying to accomplish with the maternity service. We want live babies, live mothers. We want a minimum of morbidity. We want certain social outcomes. One could sit down, it seems to me, and establish a list of criteria—the "so-what" or end-result criteria—based on the aims of maternity service.

We could agree, even on the East and West Coast, as to the aims of a maternity service, expressed in terms of patient outcome. Then we could examine the outcome of the two different patterns of care and determine which pattern yields results closest to the ideal—or whether there is any difference.

In listening to the discussion today, one might get the thought that those responsible for the mental hospitals, the most backward part of our whole hospital system, are among the first to ask the "so-what" questions. Bob Felix recently announced that if certain things are done in the community, within 20 years we will not have any more State mental hospitals; they will be a thing of the past. Already tuberculosis hospitals are becoming things of the past in many parts of the country. Maybe more of our services would be "things of the past," if we used the test of what is being accomplished with the service being provided.

MR. FUCHS:

Without disagreeing with what you said, I feel obliged to point out that even after you have applied your "so-what" comparison, you are not free of making an economic analysis in the situation also. You might find that at the cost of $500 million in extra hospital services you are able to achieve a half percent better performance on your "so-what" measure. Then the economist would ask you to balance that off against other uses that might be made of hospitals or physician services in terms of preventive care or annual checkups or something else. You would still be strung up on the fact that the resources are scarce, and any time, of course, resources are scarce, you have to make an allocation decision which involves an economic dimension.

THE CHAIRMAN:

Lester, I want to come back to something. You picked up your theme in your first remarks, but I think you have to go a little further. I don't think anybody objects to what you are saying. But you are describing an awfully difficult measurement, are you not, when you talk about attempting to measure your results?

DR. BRESLOW:

Such measurements may be difficult. However, take the case of cancer, which accounts for something like 10 percent of the hospital days in general hospitals. What kind of hospital service should we have for cancer? Cancer experts will tell you that you need surgery, pathology, radiology, certain specialized equipment for cobalt therapy, and the like. That is one way of getting at the problem and perhaps it is the best way of getting at it at the moment. However, it seems to me that the heart of the matter is what you are accomplishing with the cancer service. How many lives are you saving? How much morbidity are you saving?

In many parts of the country cancer patients are now being followed over a period of time to ascertain the outcome of treatment. If you can do that, you have the basis for comparing various types of treatment and determining what kind of service and what utilization of that service yields the best results.

The same type of thing can be extended to other types of hospital service, such as obstetrical service. In the case of rehabilitation recently, as in any new medical or social service, one must present justification with rigorous studies as to end-results. Perhaps we should extend the same type of evaluation to older services as well. I would agree with Victor Fuchs that it is necessary ultimately to get back to economics for the operations research equation: how much is it going to cost in relation to what you are going to accomplish and what alternatives are available? Here I am attempting to point out that we have to set our sights on what we are aiming to accomplish, and measure the effectiveness as well as the efficiency of the service for the operations research equation.

MR. THOMPSON:

I would not want anybody on the panel or in the audience to feel that I think that the percent of occupancy is the ultimate criteria of the quality of medical care or that economics necessarily are. What I am trying to say is that we are now developing tools, at least in a limited

sense, with which, once the goals of the hospital have been set, we can tell you in a rough way what are the economic implications of these goals. Up until now we have not been able to do this. We really have not been able to make what we call "trade-offs." We can now say that it costs us this much to do this kind of program and this much to do this kind of program. The computers into which we feed this information do not care if the average length of stay is 2.8 days or 4.5 days as far as maternity is concerned. These are medical decisions.

I think what we really need is more consideration of the validity of these medical decisions affecting the utilization of hospital beds. That is, we need a clearer definition of the goals, a clearer definition of what "should be" so that someone can say: "All right, gentlemen, this is going to cost you so much money and these are the kinds of resources you are going to have to provide to carry out this program. Do you want to do it or don't you want to do it?"

MR. FELDMAN:

In general, the major problem in conducting a "so-what?" study is the absence of randomization. For instance, with respect to the study Dr. Breslow was describing, we must take into account that the patients in voluntary hospitals are generally of higher socioeconomic status than those in county hospitals. Socioeconomic factors can influence recovery rates. Perhaps wealthier individuals don't have to go back to work so soon, perhaps they benefit from earlier diagnosis, or perhaps they receive better postoperative outpatient care. There are not many "natural" situations where we do not have a number of confounded factors. While confounding does not necessarily lead to spurious interpretations, there is always a possibility that it will. This suggests that we maintain a high degree of vigilance for situations where a procedure approximating randomization is possible or where a "natural" experiment is taking place. For instance, conditions where the usual practice with respect to length of hospital stay varies between *entire communities*, as it does in maternity cases, afford us an excellent opportunity for research. There are undoubtedly other similar situations where the dangers of spuriousness are minimal. It is worth paying a substantial price to avoid these dangers.

MR. PENCHANSKY:

I think that the two points being discussed are, of course, most important. We should especially note their interrelationship.

The tool that Dr. Peterson has discussed, as well as some of the others, is aimed at ensuring quality services in terms of minimizing unnecessary surgery and hospitalization. This tool could also be used in establishing standards for hospital stays for specific conditions, given certain affecting factors. Though the approach is aimed at utilization, it does not seem to me to be an operational control precedure which would be applicable to a large number of hospitals. Its influence would be through medical education, both in schools and hospitals, and thus it might have a long-run influence on utilization. These tools do not provide a basis for planning.

On the other hand, John Thompson's approach, if it is to be used in planning for hospital beds, must be based on assumed utilization rate and hospital stay. He says that any rates can be employed. However, in planning, say, a maternity facility, if the length of stay changes over time, then this must be taken account of or there will be either too many or too few beds. It is of utmost importance then for us to promote research which will provide us full data on utilization rates and length of stay which provide for high quality care, then planning can take place not on the basis of what does, because of historical and other reasons occur but, rather, what should take place to maximize our health goals. This does not assume that there are certain very specific rates we can find or use but, rather, that we can probably reduce many of the major discrepancies in utilization and stays and arrive at much better estimates of the optimal rates for certain types of services.

Therefore, I think that Dr. Breslow's point is most important. We have to attempt to discover which utilization rates and stays provide the best care—the "so-what" studies. Then these estimates can be used as a basis in hospital planning, and the longer-run programs of education and control can be undertaken to effectuate these rates in practice.

DR. BARSAMIAN:

I would like to comment on this. It does really emphasize what we are attempting to say. These men, at the community level, have come up

vith this thinking. Then, when you send it to the computer, the computer will say "so what." This s really important.

I would like to ask Dr. Breslow a question bout this cancer study, which interests me very nuch. There are some cancers which have a zero survival no matter what you do. However, the figure in relation to the survival of cancer is 30 percent.

DR. BRESLOW:

The cases are called localized, based on clinical judgments supplemented by whatever pathologic evidence may be available subsequently. The relative survival rate is one adjusted for mortality from causes other than cancer at the appropriate age. Five-year survival rate of male patients with localized cancer of the esophagus treated in the county hospital was 3.6 percent, very low, of course. In private hospitals it was 4.1 percent. In absolute numbers there is not very much difference but consistently, throughout almost all sites, the same gradient is there.

In the county hospitals, patients with localized cancer of the pancreas survived to the extent of only 2.2 percent but in private hospitals it was 4.0 percent. One can go through almost every site, limit the comparison to localized cases, adjust for age-specific mortality from other causes, and find the difference between private and public hospital patient experience.

We could discuss for many weeks the possible significance and the further studies that should be done. The point I am attempting to make is that these kinds of studies—not limited to cancer, but including other hospital services also—should be undertaken. We need to know the relative outcome in different patterns of hospital care.

DR. PETERSON:

I very much approve the end-result sort of study. I think it should be applied in this case because I want people to retain some doubt about the curability of cancer inasmuch as cancer death rates seem to be remarkably stable. I am reminded of the long bitter fight about the two treatments for cancer of the breast and the intense international quarrels over this question. Finally a well-controlled study was done and both seemed to be about as effective or ineffective.

I also think you have to take into account act that there are different kinds of problems. Cancer is suitable for the "so-what" kind of conclusion—an interesting new name for the end-result. However, there are other diseases than cancer, and since I am particularly interested in certain kinds of surgery, I would like to use examples from gynecology. The commonest justification for a hysterectomy is uterine bleeding and yet this disease can be successfully treated by a skillful medical gynecologist or occasionally minor surgery—specifically a D and C. This kind of disease is unlikely to benefit from the end-result study. If you take the uterus out, you are going to cure the bleeding. However, there are all sorts of alternative treatments. Medical treatment or surgery will both produce the same outcome. The value of the less dangerous medical treatment can only be appreciated if the process is studied rather than the result.

I would also like to mention one other thing, especially since we have present here some of the people from the Public Health Service who have something to do with our destiny as research workers. Most of you know many techniques that could be applied in many investigations, as was discussed yesterday. I think most of us are aware of the many interesting problems and associations there are to be explored, but the trouble with most of us is that we are constantly running out of funds and we often have other demanding duties. Therefore, it would be difficult to expand our research in the many directions suggested today; for example, to examine populations from which study patients come, or to find out relationships of our material to population.

This brings one down, of course, to the question I think is becoming increasingly of concern to all of us: the manner in which research is supported. If we are to continuously spend a large part of our time raising money (and occasionally we do have difficulty in raising such money), it creates a problem in building the sort of teams with which one can do the many interesting things that one might with each research problem.

THE CHAIRMAN:

I have one comment on the comments made on the other side of the question. Let's assume that your paper outlines what you think are the criteria for measuring proper practice in one segment or one illness and you find maximum variation. I think the question raised is: Is that solely

for improvement of teaching in medical schools, which will be the result if you find variation?

DR. PETERSON:

I do not know. I have always thought of this problem of what happens in hospitals as being much more related to the problem of hospital organization. The only person who was, I think, close to discussing this particular subject today, if I interpret your remarks correctly, was Dr. Thompson.

It seems to me that we have the knowledge and ability to practice far better medicine within our hospitals than we do; and this, I think, relates more to the organization and structure of our hospitals than it does to how we are training medical students at the present time.

MR. FUCHS:

Might it also relate to financing of medical care? Suppose you discover that there is a high correlation between unnecessary hysterectomies and fee for service surgery?

DR. PETERSON:

I suppose that the very bitter fight going on about whether the Government is going to help finance medical care for the aged involves this problem. I have talked to quite a few general practitioners, who have a great fear that if Government begins to help pay the bill, the Government will begin to ask questions about who is doing what and there is a feeling that this may ultimately end up in what is almost the universal pattern of medical care outside of the United States. It seems to me, then, that having a hospital appointment will be a very privileged thing based on extensive qualifications rather than following the philosophy we have in America, that it is good for a doctor to have a hospital appointment, without asking questions as to whether it is good for the hospital or the patient.

MR. FUCHS:

I would say to that physician that whoever pays the bill, whether Government, or labor, or management, they are going to ask questions and are going to ask for controls. I don't think it is a question of Government versus private—I think what is happening is that we are changing from a point where the individual consumer paid his individual bill and, therefore, was not in a position to ask questions or demand controls, to a point where bills are going to be paid collectively in some form or other. Once that happens, you are going to get questions asked and you are going to get controls. Therefore, I think it would be better to put the problem this way. What I was really asking you was whether your research will get into questions like the relations between the type of practice that you find and methods of financing—prices charged. For example, it occurred to me yesterday when you were speaking of the fact that men with high qualifications probably performed better surgery than general practitioners do, that maybe they charge higher prices and maybe the difference between quality is not, in the consumer's mind, judged to be commensurate with the difference in prices charged. This is probably wrong but it seems to me it is the kind of question that might be researched.

DR. PETERSON:

It could be. We are very much aware of the fact that each hospital is an individual organization, and we think what happens in surgery is part of this whole problem, but, again, our resources are finite. This is really beyond our proving.

MR. FELDMAN:

What distinguishes hospitals No. 3 and No. 4 from No. 1 and No. 2?

DR. PETERSON:

I can give you material that impressed us. When we went into hospital No. 1, a hospital of about 200 beds, they had seven or eight people in the record room and it was a very inefficient operation. We finally had to find the last 20 percent of the records ourselves. It took weeks to find them to complete our sample. The next hospital was about half the size of No. 1 and had only about a quarter as many people in the record room. However, when we gave the head record librarian the list of patients' charts we desired, she asked us when we wanted them. We said, "Monday morning," and on Monday morning we had every last one of them. There was a fantastic difference with regard to efficiency of operation.

There were many other aspects of the hospital which suggested competence and, therefore,

e began to believe that what was happening in irgery was part of the whole picture.

One of you mentioned one other subject vhich I would like to emphasize a bit. This is ecoming of increasing concern, particularly to ne group in the medical schools—the group now ttempting to take the old-fashioned outpatient linics of teaching hospitals and make them into laces to give good medical care and do good teach-ng. They don't know how to talk to patients—hey cannot get their instructions across to the atients.

MR. KLARMAN:

I would like to make several brief com-nents. One point is that I think it would be ighly important to look at the kinds of practice hat a physician pursued in two or three different ospitals. It seems to me that this is something hat should be feasible and I think you would get a real pay-off.

THE CHAIRMAN:

The same physician?

MR. KLARMAN:

Yes, because I know in New York we talk bout differences between proprietary and vol-ntary hospitals and yet we know the same phy-ician practices in both. Therefore, I think it vould be useful to see whether he does have dif-ferent standards. I would not be surprised if he lid, but let's find out.

I would also like to know from Mr. Thomp-on what the effect is of a difference in length of tay on the rate of occupancy. It seems to me that f you have, let us say, a difference of 50 percent in ength of stay between obstetrical patients on the West Coast and the East Coast, we do not get a commensurate savings because I would assume hat a shorter stay will, of necessity, also give you a lower rate of occupancy. This is bound to come.

Then I would like to ask Dr. Breslow a uestion: Just what is the evidence that they have one so well in rehabilitation or in mental health n measuring end results? I do not know of any vidence but maybe you do.

DR. BRESLOW:

Being an expert neither in care of the men-ally ill or rehabilitation, I will comment freely on this. My point was that efforts are being made to determine the outcome of care in different situations for the mentally ill and for patients receiving rehabilitation services.

Just this morning, for example, I talked to Dr. Davies about the studies of the effectiveness of rehabilitation in Oxford. I think the evidence is quite clear, from people who have visited there and also from what has been written about it, that the aggressive rehabilitation program (tied in with community resources, both medical and family resources) leaves far fewer people in the hospital with long-term illnesses than formerly. More of these people are outside of the hospital.

If to be outside a hospital and functioning at home is a desirable goal—as a physician and public health person I would accept this as one general criterion—then I would say that the geriatric hospital at Oxford has done a remarkably fine job. Similar work is also being done in a few places in this country, including evaluation of what is being accomplished in the rehabilitation of patients with particular conditions, for example, stroke. The evidence is beginning to pile up. While it is crude and not entirely satisfactory and all of us can criticize it, the point is that efforts are being made to do this, and I would like to extend the same approach to the general hospital.

THE CHAIRMAN:

I am sure all of you will join me in looking forward to the next two presentations. We are delighted to have two representatives of Great Britain here to tell us about research there, or to make any comments they care to about the activities that we have been discussing here as they may relate to problems in their country.

I hardly need introduce these two men, who have traveled many times in this country and who are personally acquainted with many in the audience.

Dr. Brotherston is going to carry the main assignment. We appreciate his taking a week out of a very busy life to come over and participate.

Dr. Brotherston received his medical degree and a number of others at the University of Edinburgh, traveled in this country as a Rockefeller scholar in preventive medicine and, between 1948 and 1953 was lecturer in social and preventive medicine at Guys Hospital and the London School of Hygiene. I could go on listing many other

pertinent assignments in relation to what we are asking him to discuss this morning. He is, as your program shows, presently Dean of the Faculty of Medicine of the University of Edinburgh.

Dr. J. O. F. Davies is Senior Administrative Medical Officer, Oxford Regional Hospital Board, Oxford, England. I would guess that quite a few in this audience have been over there visiting the Oxford Board, which has demonstrated new and interesting ways of planning institutional facilities and medical care for the population served in that district. This is in many respects a bellwether district for the whole country and, certainly, we have all learned many things from their halfway house and day hospital and other organized services.

Dr. Davies is currently on loan to the Ministry of Health, concerned with coordination of the hospital program. I should think that everything that goes on in the United Kingdom, as they endeavor to coordinate their hospitals and medical care, is of fascinating interest to us, and I gather from the visits we have that what we try to do always is to compare values.

Research on Hospital Use in the United Kingdom

DR. BROTHERSTON:

At the outset, let me express my agreement with Dr. Odin Anderson (1) who, at the commencement of your previous Conference, took issue with "the belief that some objective criteria can be established to be followed by the medical profession that will provide a scientific basis for hospital use. This is understandable but Utopian thinking," he said. "The range of 'proper' use in hospitals is very great, from admissions for saving life to admissions of comfort and convenience." Nevertheless, no doubt we are all hoping by research to clarify our understanding of the way in which hospitals are used at present and the needs and other forces which are determining their use, so that we can shape our policies with greater clarity for the future.

It is difficult for me to judge how far an account of research in this field done in the United Kingdom will be helpful to you. It is even more difficult to decide how to select and present the material. Medical care systems vary so much in their form and usage according to the social context in which they operate that generalizations from one system to another may be misleading and unhelpful. This goes for particular institutions (such as the hospital) within medical care systems as well as for the system as a whole. There is an overall sense, of course, in which the similarities of problems, methods, and intentions between the medical care systems of the U.S.A. and the U.K. are greater than the differences, but this still leaves the possibility, if not probability, that the differences are sufficiently great to make some of the research which I will tell you about sound quite alien to you, if not positively meaningless.

It is apparent from such comparison as can be made that hospitals, aside from their different political and economic organization, are used in somewhat different fashions in the two countries. In Appendix I, I have tried to spell out a few of the differences. It would seem, for example, that the hospital in the U.S.A. is used more frequently, although for shorter durations of stay and with, apparently, a higher content of surgical activity. Table 5 in the Appendix shows the relative chances in the 45–65 and 65-and-over age groups of the single, widowed, and divorced being admitted to hospital in the two countries. With us the isolates have a markedly higher relative chance of hospital admission, suggesting that our hospitals are used to a greater extent to compensate for certain social deficiencies as well as to provide clinical care.

While considering the context in which the hospitals operate in the U.K., one has to remember that the National Health Service organization took over and intensified the system which had developed over many years in the U.K. of separating the medical profession into two main groups: the consultants and specialists hospital-based and tending to have a monopoly of the technical and other resources concentrated in the modern hospital; and the general practitioners responsible for providing domiciliary care and practicing from their own offices or surgeries, usually with slender supporting technical resources. The general practitioner has the monopoly of first contact with the patient, in other words the consult-

ants and specialists (the hospital hierarchy) may not normally see a patient unless he is referred by a general practitioner. A great deal of the discussion in the U.K. and some of the research done and planned is directed toward the borderland of responsibility between hospital and general practice—for example the ambulant care services provided in hospital outpatient departments and certain diagnostic services increasingly being made available by the hospital service directly to the general practitioner.

It is notable that the ordinances of the Health Service itself have not laid down clear dividing lines of responsibility between hospital and G.P., but have left these to be worked out by planning decision. Since the establishment of the Health Service, the technical trends influencing medicine have moved with increasing force towards more and more concentration of resources in the hospital—"the medical factory." Therefore, definition by planning has tended to circumscribe general practice without similarly narrowing the remit of the hospital. The National Health Service Act says that "a hospital means any institution for the reception and treatment of persons during convalescence, or persons requiring medical rehabilitation, and includes clinics, dispensaries, and outpatient departments maintained in connection with any such institution or home as aforesaid," and that "hospital accommodation shall be construed accordingly." In other words, a hospital is a hospital is a hospital . . .

Looking to the general practitioners' terms of reference for a definition of their responsibility, we find it to be "those aspects of the medical care of their patients which are not part of the hospital monopoly"; so the official definition goes in a circle. It may well have been best to omit more precise definitions at the start of the service, but there is no doubt that an increasing need is felt now to clarify the responsibilities of hospitals and general practitioners so as to unite them in partnership rather than to separate them on a line of hospital monopoly. It is interesting, for example, that the Hospital Plan for Scotland (2) states as its first principle that the hospital service has to be treated as one part of a comprehensive Health Service, that its operations and development must be coordinated both with the Local Authority health and welfare services and the general practitioner service; that the scale of hospital provision aimed at is based on the assumption that hospital treatment and care will be provided only for those who need it. We are, of course, still left with the 64-dollar question: What is hospital need?

Another important element of the background situation is that we embarked upon our National Health Service in the U.K. with little tradition of research in the field of medical care. Although Britain has been a pioneer in the public provision of health services, the basic reconnaissance and planning have tended to be done by committees of experts and informed lay people rather than by research teams. In 1860 Florence Nightingale (3) said, "I am fain to sum up with an urgent appeal for adopting this or some uniform system of publishing the statistical records of hospitals. I have applied everywhere for information, but in scarcely one instance have I been able to obtain medical records fit for any purposes of comparison." The situation changed little for almost a century. In 1961 Jewkes (4) was able to say: "In most countries less is known about the medical services than about the minor industries. If ordinary businesses knew as little about whom they serve and in what quantities as most countries know about the frequency of illness and who makes call on the medical services, these businesses would rapidly be in bankruptcy. Some obvious exceptions there are. The United States is far in the lead in measuring and surveying in order to understand what sickness means to the community. On the other hand, there are countries which seem content to remain uninformed and give the impression that they are not very anxious to know what is going on. Britain is one of the backward countries in this respect. It is a marvel, and one on which foreign observers frequently remark, that a scheme so vast as the National Health Service can be carried on with so little comprehensive knowledge of its detailed workings."

Perhaps we have been too preoccupied with the mechanics of providing services to pause to take stock. In the past it was possible to proceed on the assumption that all provision must be good, therefore, why waste time over the details. But there are major forces at work now affecting the medical care systems of all advanced countries which completely invalidate such a point of view. Chester (5), in an interesting paper to the 11th International Hospital Congress, delineated the forces of scientific and technological advance in medicine and the social demands for higher standards of medical care which have so sharply in-

creased the cost of medical-care provision that those responsible for the system seek all possible means of increasing efficiency. This need of increasing efficiency, in the sense of the best return for money and other expenditure in terms of the improvement and comfort of the patient, has brought about a substantial change in the U.K. in recent years. There is now a growing interest in and volume of activity in medical care studies.

The central government departments concerned, previously without any research organization, are now building themselves up in this respect. For the first time they have a financial budget for the purpose, and they are evolving organizations which bring together medical statistics, operational research, and other appropriate techniques.

One of the most significant developments has been the entry of the General Register Office, with its great tradition in this field of mortality statistics, into national morbidity statistics. By means of its General Practice Morbidity Studies and its Hospital Inpatient Enquiry, the General Register Office has made a valuable start in developing the tremendous potential the National Health Service offers a statistical system for evaluation. The Hospital Inpatient Enquiry (6), already providing valuable information and full of promise, had from the outset a double purpose of assisting in the administration of the hospital services as well as contributing to knowledge of community morbidity. The information is collected from a random 10-percent sample of patients discharged from hospitals. At the earlier stages, hospitals were invited to come in on a voluntary basis, and did so in increasing numbers, but since 1957 all hospitals have been required to participate. The data collected permit tabulations which give a national picture of hospital-treated disease by diagnosis, by type of hospital, by area, and by certain social characteristics of the patient. Of course the data have the limitations of their source, and there is still much work to be done in perfecting techniques of collection and interpretation. But it can be said that a very solid foundation has been laid for a valuable and continuing review of hospital work which will be a mine of information to the research worker.

In Scotland a Hospital Morbidity Survey (7) has been initiated by the Department of Home and Health for Scotland, based upon data collected from all discharged patients. As this survey is of much more recent origin, there has not yet been time to process it for public use. For a fuller account of sources of information on the Health Service, a report by my colleague, Dr. R. J. Peters, is included as Appendix II.

Research has found little place in the activities of local and regional hospital organizations, or other administrative units of the Health Service; but there have been some praiseworthy exceptions. Birmingham, for example, has made notable contributions to the methodology of hospital records and morbidity recording, and the Oxford Regional Hospital Board has seized the opportunities which a Regional Board's position offers to study the workings of a regional hospital service. It has an operational research unit, with valuable contributions to its credit, and is entering upon increasingly sophisticated studies. Its program of work envisaged or on hand includes an evaluation of progressive nursing care, a study to attempt measurement of the effects of varying lengths of stay in hospital for given conditions, the establishment of an experimental ward to try out the effects of varying forms of organization, staffing and management at the ward level, and a study to clarify how far and for what periods patients are dependent on nursing staff.

No description of research in this field would be adequate without special mention of the work of the Nuffield Provincial Hospitals Trust. Even before the Health Service was established the Trust was in the field, and since the early days of the service it has fostered and supported work, some of which have been outstanding. Many studies mentioned in this paper have been supported by it, and if we are now in a position to move ahead effectively on a wider front, this is due primarily to the work supported by the Trust. Its usefulness has convinced the doubters, and it has shown the way forward in methodology. The volume on the Functions and Design of Hospitals (8) has already become a kind of classic in our literature, and the methods it described have influenced substantially our research and planning for hospital organization and building.

The paper by Chester already mentioned outlines a possible framework for thinking about research in the field with which we are concerned. He poses four questions for consideration when thinking about the best use of hospital resources. Are we satisfied that our domiciliary services are

efficient in keeping people out of hospital, and in getting them out again quickly if they have to be admitted? If patients must go to the hospital, is it really essential to admit them as full inpatients? For those who must be inpatients, are we satisfied that we are making the best use of our resources of beds, equipment, manpower, etc.? How do we ensure in planning our future hospitals that we make the best use of funds available? I propose to use his questions to order my description of work done in the U.K., but I shall reverse his order and start first with planning and hospital provision.

Planning the New: How Many Beds and How Should They Be Deployed?

We have had a variety of estimates of bed requirements in the past, based on intuition, rule of thumb, or replacement estimates. The approach of the first major capital building program for the Service sharpened our attention to the question. When the capital cost of new hospital provision averages 5,000 to 10,000 pounds per bed, it becomes a matter of some importance to get estimates as nearly correct as possible. We needed something more precise and up to date than the wartime hospital surveys. A number of studies have been carried out, but significantly, none make any claim to provide a direct estimate of need as a guide to hospital provision. There seems to be tacit agreement that "need" in this context is too variable and elusive a concept to be measured. Instead, measurement of manifested demand is substituted, with the addition of various calculations designed to adjust the sum towards a measurement of need.

The first surveys were carried out in Ayrshire and Stirlingshire in Scotland (9). These were primarily total hospital morbidity surveys of all residents in these counties throughout a year, but a calculation could be made of the total inpatient hospital care of all kinds, which worked out at 2.275 days per head of the population per annum.

Later studies concerned with manifested bed demand rather than with morbidity have followed the less laborious method made familiar by Bailey (8). The method applies queuing theory to the establishment of a "critical" number of beds. In any year the number of patients recommended for admission (i.e., inpatient deaths and discharges plus or minus the change in waiting lists for admission to hospital) multiplied by the average duration of stay of the patients died and discharged gives the number of bed days which would have been spent in hospital had all the patients recommended been admitted. The total number of bed days divided by the number of days in the year gives the critical number of beds at an occupancy rate of 100 percent. The actual number of beds required can be estimated by adding to the critical number twice the standard error attached to the sample, plus one or more beds according to the rate at which it is desired to run down the lists of those waiting for admission. The final rate is usually scaled down and expressed at a more realistic occupancy rate, such as 85 percent. To calculate the population "at risk" so far as the hospitals studied are concerned, hospital records over a wide area are surveyed; and thus manifested demand can be expressed in bed rates per 1,000 of population (10). More recently Bailey (11) suggests that in certain situations it may not be necessary to calculate the population at risk, and offers a method of estimating bed provision for a specialty, employing calculations which use the figures of change in manifested demand revealed by the waiting list, and also the figure of "optimum duration of stay" as defined, for example, by the medical staff concerned. Variation in demand can be met by varying duration of stay.

The first studies of this kind were carried out by the Nuffield Provincial Hospitals Trust in the Norwich and Northampton areas. Later ones using the same methods have been made, for example, by the Oxford Regional Hospital Board in Reading (12). To test the method and to obtain comparative figures in the different social setting of the North of England, Forsyth and Logan (13) carried out a study in Barrow and Furness, and Airth and Newell (14) surveyed the Tees-side region.

The "critical number" in these studies came out at figures ranging between 2 and 3.6 acute beds per 1,000 population at 85 percent occupancy rates, all figures being substantially lower than the estimate of 7 to 8.5 beds per 1,000 which had emerged from the wartime hospital inspections. All the estimates have in common the fact that they approximate very closely to the actual bed provision for the populations concerned. The limitations in-

herent in the technique becomes apparent. As Abel-Smith (15) has said, "It was found that areas which already had fewer beds seemed to need fewer beds, while those having more beds needed all the beds they had. Despite all the talk about haphazard hospital development it appeared that supply was really equal to demand. How wise our forefathers had been! Or how bad our interpretation of the statistics. What we had discovered was Say's Law. Within limits, supply creates its own demand. When general practitioners know that hospital beds are short, they don't hospitalize patients who are not desperately in need. They treat them at home and get used to doing so. And it is only a matter of time before traditional medical care becomes regarded as good medical care. When hospital doctors know that beds are short, they reduce the length of stay. When they know they are plentiful they increase the length of stay."

Airth and Newell in their study looked at the relationship between supply and demand for beds in four specialties, in four hospital regions of England and Wales, and found it to be almost linear; and others have drawn attention to the same phenomenon of supply apparently determining demand. Nevertheless, the technique seems to be the best we have available. If it is to be used in planning, however, it is essential to appreciate its limitations fully; otherwise there is a real danger that we may be taken in by our own figures, and begin to confuse "manifested demand" with real need.. Forsyth and Logan (13) quote Professor Devons as saying, "There is a passionate desire in our society to see all issues of policy decided on what we think are rational grounds. We rebel against any admission of the uncertainty of our knowledge of the future as a confession of weakness. What easier way to pander to this obsession than to have all issues debated in the scientific or pseudoscientific language of statistics?"

Some of the studies quoted throw a little light on the phenomena which lie behind this apparent equilibrium of supply and demand, but only enough light for us to see that the demand is made up of a series of forces each with a wide range of variation. There are differentials of morbidity, of course, but the relationship of these to demand is not well understood and is apparent only where the differentials are fairly gross. There are differentials in social and demographic factors; the status of the population in terms of age, sex, and marital status is influential. Perhaps the clearest display of this appears in the interesting analysis of the hospital population of England and Wales in the census of 1951, a study undertaken by Abel-Smith and Titmuss (16) and referred to in Appendix I. There are differences in standards of housing provision, but these are unevenly effective; differences between rural and urban rates which suggest differences in social custom as well as in environment and morbidity; differences of social class behavior—e.g., in relation to such operations as circumcision and tonsillectomy—the degree of pressure for elective surgery and other pre-planned uses of the hospital services tending to increase with higher socioeconomic status (14). There are marked differences between general practitioners in the extent of referral of patients to hospital within the same areas, which do not seem to be readily explainable in terms of any simple characteristics of the doctors concerned, such as age, qualifications, size of practice, extent of use of laboratory, X-ray, and other services (13). Barr (12) points to the important unexplained problems behind divergent use by similar types of area, and says that there tend to be strong correlations between level of use for different types of hospital service in a given area.

Three assumptions go along with the "critical number" method of estimating demand, if it is to approximate to a measure of need. The waiting list should be a meaningful expression of unsatisfied demand: this "waiting-list for admission" unfortunately has been shown to be varyingly up to date and realistic in this respect (17). There should be no recognized additional unmet demand such as can be ascertained by canvass of local general practitioners. Cases admitted to hospital should be genuinely in need of hospital treatment, and should stay there only for as long as is necessary on medical grounds.

Studies have been made in acute hospitals to assess the inpatients in this last respect. Broadly the methods employed have been similar; criteria of hospital need have been laid down and applied to each patient in the hospital population studied. It was one of the special intentions of Forsyth and Logan (13) in their study in Barrow and Furness to test this particular point. They found a substantial number of patients who on strict medical criteria did not need hospital care. The difference was greater for medical patients (where 25 percent of the male patients and 40

percent of the female patients were so classified) than for surgical patients. In Birmingham, Crombie and Cross (18), one of whom was a general practitioner, took part in a similar type of assessment study, and judged that a quarter of the patients in the medical wards visited "had no diagnostic or therapeutic requirements at hospital level." On the other hand, Mackintosh, McKeown and Garratt (19), also in Birmingham, in an assessment of patients in the medical wards of three large general hospitals came to the conclusion that only 13 percent did not need hospital care on strictly medical grounds, and that in only 4 percent of cases admission might conceivably have been prevented by augmented domiciliary medical and social services.

It may be assumed that estimates of "manifested demand" as indicators of need are at their most reliable in situations where demand is relatively stable in terms of morbidity problems whose suitability for medical care is well understood by the public, and where the therapeutic approach is not changing rapidly. Evidence suggests that they provide a better estimate for surgical needs than for medical conditions. The point is interesting in terms of certain controversial estimates which have been made for England and Wales of the future bed needs for mentally ill patients. Tooth and Brooke (20) and Brooke (21) have estimated the future need for beds for such patients in the light of the changing therapeutic situation in psychiatry. Their calculations are fairly elaborate, since they involve estimating by cohort analysis the rundown of the large proportion of long-stay patients who at present occupy many hospital beds, as well as estimating the needs for shorter-stay patients. Basing their calculations on experience over the 5-year period 1955–59, they forecast a need for 1.8 mental beds per 1,000 population, a virtual halving of the present number of beds. Perhaps the truly remarkable thing is that this estimate has been immediately accepted by the Minister of Health, who has incorporated it in the 10-year Hospital Plan for England and Wales (22). Never surely outside the armed forces has the operational researcher's advice been acted upon more swiftly or on a larger scale. There is considerable controversy over this decision at present, the basic assumptions on which Tooth and Brooke made their calculations being questioned by some. I find the calculations less doubtful than their interpretation. Policy on care of mental disease is in a state of considerable flux at present in the U. K.; and there are assumptions behind present procedures of early discharge which are, as yet, not fully tested. This is the kind of unstable situation in which caution is necessary in estimating short-run data and elaborate extrapolations from them. Let me add that the Secretary of State for Scotland in the 10-year Hospital Plan for Scotland (2) has been much more cautious than his English colleague.

The deployment of hospital beds has had some research attention in the U. K., and our thinking has been clarified by a series of studies made by McKeown and his colleagues in Birmingham on the medical and nursing care needs of patients in the Birmingham area for all categories of hospitals. Their work started with studies of the chronic sick made about the time of changes in hospital organization which followed the introduction of the Health Service (23), changes which highlighted the problem of hospital care for chronic sickness in an aging population. (They have recently reassessed the position of the chronic sick.) (19) Their next studies were concerned with patients in a tuberculosis sanatorium (24), mental hospital patients (25), and finally patients in acute hospital wards.

The methods employed in all the surveys were similar. A clinical and nursing assessment was made and each patient was allocated to one of four categories: patients who needed full hospital facilities, such as frequent medical attention and skilled nursing; patients who needed only limited hospital facilities—essentially simple nursing (washing, dressing, feeding, attention to bladder and bowel, etc.) without medical supervision; patients who needed only limited hospital facilities—essentially supervision because of their mental state with (in a few cases) simple nursing; patients who needed no hospital facilities, but remained in hospital chiefly for social reasons.

They came to the conclusion, having assessed the needs of all Birmingham patients in hospital, that their distribution between mental, chronic, and general hospitals was determined largely by age. "Those needing the full facilities of a modern hospital are in general or mental hospitals if they are young, but in late life they are mainly in chronic hospitals. Those needing limited hospital facilities with or without medical supervision are distributed arbitrarily between chron-

ic, mental, and general hospitals according to age rather than the type of care they require." They add that "these results show the desirability of removing the traditional divisions between the major classes of hospitals and placing patients in facilities which are appropriate to their needs." (26)

An interesting recent study by Kidd (27) in Belfast has suggested that misplacement of the patient in the wrong kind of hospital may do positive harm. He examined the progress of patients aged 60 and over in the geriatric unit and mental hospital. He classified them according to whether they had been placed in the correct type of hospital. In both units, the misplaced patients had a higher mortality than equivalent cases correctly placed.

On the basis of his work McKeown has founded his idea of the Balanced Hospital Community. From the fact that mental illness and breakdown of health from degenerative disease in older ages are certain to be an increasing proportion of the total problem of medical care, he concludes that they should be brought back into close association with the main stream of medicine. The whole concept of the hospital should be reexamined in the light of this assumption, and replanned to bring the various categories together in a hospital community with varying types of provision according to the medical and functional needs of the patients.

It is of considerable interest that McKeown, with support from the Nuffield Provincial Hospitals Trust, is carrying his ideas forward in a planning exercise to discover the needs of such a proposed hospital community grouping. The exercise goes beyond the conception of institutional care. The aim underlying the project is that all aspects of health care should be integrated and present divisions between general practitioner, local authority, and hospital services broken down. According to the plan, all types of institutional care should be provided on one site in proportion to the needs of the community served, and a notional site has been chosen adjacent to the main teaching hospital in Birmingham. The plan postulates serving a surrounding population of 120,000 people—a population group large enough to provide a reasonable spectrum of community needs, but not too large for detailed study. The program of work has three main stages. First is the collection of background information concerning the demography and topography of the area. Second is the definition of a series of "patterns of care" for each health facility in the scheme—these include maternity, pediatrics, mental health, geriatrics and the acute sick at all ages. From these patterns the final stage of investigation will be developed, consisting of the preparation of an architectural scheme for the development of the site. Only after that can it be judged whether the project is viable.

Clearly there are certain types of medical-care research which can be carried out only by the experimental method. This is certainly the most advanced experiment yet proposed in the United Kingdom, where experimental approaches to solving health care problems have been restricted in the post-war period largely for financial reasons.

Do We Make the Best Use of Our Existing Hospital Resources?

EFFICIENCY IN BED USE.—An important, if humdrum, development has been our progress towards an agreed method of arithmetic to describe bed use, after solving elementary problems of definition. We are building up the experience on which an efficient discipline of vital statistics of hospital use can be based. As with other vital statistics, the quality of the information produced depends on the validity of the basic data. To improve these, a slow and steady process of education is necessary, together with the realization by those whose job it is to look after the basic records that these are really useful, and used.

Benjamin and Perkins (28) have dealt recently with the current methodology of bed-use statistics. Their paper illustrates the value of a more sophisticated consideration of conventional routine statistics. Again attention is drawn to the fallacy of using the occupancy rate as a measure of efficiency without taking account of the turnover, or empty-bed interval. They illustrate by quite simple models the great increase in workload which is involved in quite small reductions of average duration of stay, and also of turnover interval.

In order to meet increasing demand with the same number of beds, there has been continuous pressure to examine statistics of duration of stay, turnover interval and occupancy, and a sub-

stantial and steady acceleration in the pace of work has taken place. This is one field of medical care where trans-Atlantic comparisons seem to exert their influence upon us. Curiously enough, with trends towards shorter durations of stay, no one seems yet to have attempted to assess what difference this makes to the acute hospital patient, although Oxford Regional Board are proposing to make such a study. One grave deficiency of our methodology is that we have, as yet, no effective means of taking readmissions into account in our balance sheet of results from the statistics of patient care.

We have only partially succeeded so far in molding our routine hospital statistics into the shape of an external audit permitting effective comparison between different hospitals and regions and fruitful discussion of differences. There is not yet sufficient uniformity of processing and presenting data to permit this to be fully effective. Nevertheless, increasingly comparisons are being made which create pressure for uniform methods of processing and presentation. Potentially we have the whole hospital system at our disposal for routine comparisons of the simple criteria of hospital activity.

The Hospital Inpatient Enquiry has great possibilities in this respect, although the fact that it is based on a 10-percent sample restricts its usefulness for comparison between small units. Among other features for comparison, the Enquiry in disclose differences in waiting times before dmission to hospital, which require further investigation—for example, figures noted for one region in 1955 show waiting times of over a month for some cases of breast cancer, suggesting either administrative failure or shortage of facilities (29).

Oxford Regional Hospital Board have established a procedure of processing their own copies of the data supplied to the General Register Hospital Inpatient Enquiry. Their statistical unit is building up a series of regional studies of hospital differences based on these data, which forms a useful comparative study. For example, widely differing durations of stay were shown among the regional hospitals: the mean range for appendicitis without peritonitis was 6.3 to 11.6 days, and for hernia without obstruction the means ranged from 6.2 to 13.4 days (30).

Lee, Morrison and Morris (31), making interesting use of the Enquiry data for a set of comparisons between teaching and nonteaching acute hospitals in respect of fatality rates from appendicitis, perforated peptic ulcer, and hyperplasia of the prostate, have shown consistently more adverse experience in the nonteaching hospitals. They found the same situation with diabetic coma. After allowance was made for factors which might have led to selection of patients of different prognosis in the two groups of hospitals, the differences still remained. They draw attention to the markedly more favorable situation with regard to staffing—surgical, anesthetic and nursing—in the teaching hospitals.

Admission policies affect bed usage, and large towns have a Bed Bureau system to which a general practitioner may apply for assistance in finding a hospital bed for his patient. Reference is frequently made to the fact that aged patients, even those suffering from acute conditions, are more difficult to get into hospital than those younger. The Emergency Bed Bureau of the Liverpool Regional Board (32) carried out a study to find whether this is in fact so. The doctor submitting the patient approaches the Bed Bureau and gives particulars of the patient. The Bed Bureau then contacts hospitals, giving the patient's age and diagnosis, until the patient is placed. As each hospital is contacted the time is recorded on the case sheet. In the survey, the time which elapsed between receipt of the request and the acceptance was used as the index of ease of admission. The average time increased steadily with age, being 24 minutes for patients aged 15 to 44 and 43 minutes for patients aged 65 and over. There were diagnostic differences in ease of admission; for example, coronary heart disease cases were easy to admit, irrespective of age, and, in general, surgical cases were easier to admit than medical.

Within the hospital, alternative deployment of beds is usually a matter of administrative action rather than of controlled experiment. But discussion in relation to "progressive patient care" and "intensive patient care" is causing considerable interest and speculation at present. These systems of care are difficult to apply in hospitals with the British system of the small independent clinical unit of 30 to 60 beds, and uneconomic to operate without some more centralized system of admissions. Experimental studies are planned in a number of hospitals.

Jeffery and Barr (33) from the Oxford Regional Board Research Unit are attempting to construct a theoretical model to describe the nursing care of a surgical patient during his stay. Their object is to assist in selecting a time for the discharge of the patient in normal circumstances. The relationship of the time chosen to the patient's degree of independence can be more clearly seen, and so the choice of time is less blind. The stay in hospital for surgical treatment is divided into three stages: admission to operation; heavy or medium nursing care; light or domestic care. Nursing care is categorized into skilled, intermediate and domestic levels for each nursing duty, and each component is timed and graded. This is the first step in a plan of work to clarify inpatient use of hospital facilities in operational research terms.

Planning new hospitals involves for us a move away from the old Nightingale wards, and guidance is needed to decide how many single-bed rooms should be provided. Goodall and Bailey (34) of the Nuffield Trust team made a study to determine what proportion of beds in a ward should reasonably be provided in single rooms to satisfy the medical needs of the patients. After reference to a number of physicians, a list was compiled of 31 conditions qualifying patients for accommodation in single rooms, and it was used by interns in 29 wards of 8 general hospitals to record each day over a period of a month whether the patients in the ward qualified for single rooms. From an analysis of these records, conclusions could be drawn about the most desirable provision of single rooms (desirable in the sense that statistical prediction showed a high provision figure with a high usage figure).

Bailey cites the example of policies of early ambulation to point out that changing medical fashion or technique in treatment is one of the most difficult things to allow for in ward design. The Nuffield group also made studies in ward design based on the principle of compactness in terms of the nurse's movements.

Newell (35) has tackled the problem of estimating the appropriate provision of emergency beds in hospitals by testing a simple mathematical model against hospital data. He found that any scheme for the provision of emergency beds must take into account seasonal differences, including in particular any difference in the demand pattern on Sundays as compared with weekdays. When this is done, it is shown that for average daily demands of between 5 and 30 beds, 2 more beds than the average daily demand should be provided to ensure a bed immediately for 95 percent of emergency cases.

EFFICIENCY IN USE OF SPACE AND EQUIPMENT.—As the hospital becomes more and more mechanized, requiring increasingly expensive technical plant and manpower, so it becomes more important to ensure maximum productivity. It is only recently, however, that the hospital service in the U.K. has been seriously influenced by the kind of approach and techniques commonly used in industry. But significant changes have taken place.

It is difficult, in talking about this aspect of the work, to draw any hard and fast line between operational research on the one hand and work study and the procedures of organization and method on the other. Techniques of "operational research," developed during wartime to improve prediction in aerial bombardment and other military situations, have been adapted to health service problems, introducing to them the use of statistical models. Such procedures quantify the results of existing procedures and possible modifications, thus permitting the administrator to judge more clearly the consequences of alternative courses of action. They have been used to examine such matters as ward design, outpatient appointment systems, and effective demand for hospital beds.

Other techniques, commonly called work study and organization and method, have been transplanted from industry. Numerous hospital activities have been investigated by work-study methods, ranging from kitchens and the deployment of domestic staff to the work of outpatient departments. The techniques used are the analysis and timing of activities so that they may be described quantitatively to permit rational consideration of possibilities of more effective deployment.

Similar attention has been paid to functions within the hospital with the aim of achieving more efficient hospital design and layout of component parts. For this purpose useful partnerships have been formed of different professional skills, for example, the architect, the work study expert, the statistician, the nurse, and the doctor. The procedure, known as "organization and method" or business efficiency examinations, has been used in hospital and local health authority services

to scrutinize staff activities and methods of record-keeping and design.

It can now be assumed that these investigative procedures have fully justified themselves and have come to stay. My only criticism is that, in unskilled hands, they are at best useless and at worst dangerous, the danger lying principally in the risk of drawing conclusions from inadequate knowledge of the situation. What we must do now is recruit, train, and expose to medical care situations more people of the necessary calibre to increase the amount of investigation so that it can become a built-in feature of the service; and we must finance research groups to carry the techniques to fresh problems so that methods can be developed to extend the range of activity of the permanent investigative groups.

As a working definition in the context of this paper, I will not refer to work-study procedures which are now essentially of a routine nature, but will describe as operational research only work which has had more general application. A further note about the organization of work study in the service may be of interest, however.

In 1954, to find how useful management efficiency techniques would be in hospital administration, the Ministry of Health (36) provided the hospital authorities with the services of a team of investigators. Their work, reinforced by the results of independent experiments made by Oxford and Manchester Regional Hospital Boards and Westminster Hospital, demonstrated that systematic study of the mechanics of running a hospital usually achieved more economical use of resources and improved services. The Ministry decided, therefore, that such work, essentially a matter of management, ought to be developed as an integral part of the hospital service, with its techniques modified to meet the special needs of hospital patients. Toward this objective, steps were taken between 1958 and 1960. The National Health Service Advisory Council for Management Efficiency was set up and senior O & M and work-study experts were appointed by Regional Hospital Boards and Boards of Governors. Today all Regional Hospital Boards and most teaching hospitals have such staff.

The Ministry's O & M Unit*, enlarged and made permanent, has a key position in the plan to encourage investigation in the hospital services and is responsible for conducting pilot studies on subjects useful to the hospital service and publishing summarized reports of them. It also collects and distributes information on efficient methods and efficiency studies completed and in progress, and arranges meetings where O & M and work-study officers can pool experience. In addition the Unit undertakes special studies for Regional Hospital Boards, Boards of Governors and the Ministry itself.

Bailey has made notable contributions to this field, and he discusses theoretical aspects of some of the work in a number of papers (37). For example, he deals with developing appointment systems in outpatient departments, with general problems relating to internal traffic, with studies in the hospital and ward layout, and with the problem of assessing the efficiency of single-room provision in hospital wards, which has already been referred to.

The Nuffield Provincial Hospitals Trust (8) played a notable part in developing the research aspects of this kind of work. Often their studies have shown the way for a more routine approach through the Ministry's own organization. I have already referred to the exhaustive examination they made in 1955 of the hospital, its functions and design. A more recent example of their work in this field is a study by Brigadier Welch of the organization of diagnostic X-ray departments (38).

The post-war increase in the intricacy and volume of X-ray investigations has outstripped the resources of most departments. This expansion in complexity and demand has not been balanced by a similar expansion in hospital development. The present trend in the hospital service towards providing more outpatient facilities, with the aim of seeing and treating more patients in less time, has further increased the X-ray department's difficulties. It is not surprising, then, that many are badly arranged and difficult to organize and run economically.

The Nuffield Report is based on a 3-week investigation of diagnostic departments in a group of six hospitals, which included a market town, a large provincial, and two teaching hospitals. All

* The subjects of the Unit's pilot and special studies include: hospital secretarial, clerical, domestic, pharmaceutical, and maintenance services; the departments of pathology, physiotherapy, and diagnostic X-ray; nursing; outpatient waiting time; costing; chest clinics. It has also studied R.B.B. organization, A.D.P. equipment, and the ambulance service.

were found to be far from ideal, so poorly accommodated as to make organization difficult, and working, on the whole, in comparative isolation from other associated departments of the hospital. Faulty techniques were identified, both in the hospital and in the departments, to explain this. The reaction of the radiology departments to these defects tended to be a reluctance to meet some requests even though genuinely urgent. The flow of patients was considered, and it was discovered that the two peak periods making difficulties for the departments were largely created by the system of bookings used. The waiting time for patients was examined and procedures discovered to lessen it. Careful observation showed that less than 50 percent of the radiographer's time was actually employed in radiographic or closely related work. Similarly, radiographic rooms were used for less than half their available time, even in the busiest departments.

EFFICIENCY IN MANPOWER USE.—This section should really be called: "Research to improve the use of womanpower," since much the greatest body of relevant research done in the United Kingdom has been devoted to the study of nursing needs, training, and deployment. This may be surprising, but it is true. Nursing activity in hospital was one of the first fields to be investigated, with the acute shortage of professional nurses acting as a drive toward the discovery of ways and means to better use the available resources. Work-study procedures were used to describe as precisely as possible the work done by the nurse and highlight those aspects of her work which might be delegated to less skilled people. Similar studies have indicated deficiencies in the training of the student nurse and set in motion various experiements to achieve improvement.

In fact, there is probably just as much need to study, in the same way, the relationship of medical manpower to the hospital, but almost nothing has been done in this connection which could truly be described as research. Sundry reports have dealt with aspects of the profession, but these have been more or less on traditional lines as far as methods of collecting information are concerned. The Report of the Platt Committee (39) dealt specifically with hospital staffing, particularly numbers of consultants and specialists and the appropriate proportion of trainees for the consultant posts. It drew attention to grave discrepancies between the strength of consultant and trainee consultant posts and more junior grades in the hospital service and made recommendations on the general practitioner's position in the hospital. A good many problems amenable to operational study can be seen behind the discussion and recommendations of the Committee, but no plans have been made for such work so far as I know. Certainly the medical staff, as much as any other factor in the hospital situation, deserves attention by operational methods to achieve optimum usage of time and skills. Work done in the planning of appointment systems for outpatient departments (37) is an example of this kind of desirable activity, since it involved better planning of the consultant's time.

Attention has been called to problems similar to those so well publicized for the nursing profession of the misuse of skilled personnel, whose time may be taken up by work which could easily be performed by less highly trained people. This is eminently the kind of problem suitable for operational and work study. An example of this kind of misuse was mentioned previously of X-ray departments, where the radiographer was found to be spending less than 50 percent of his/her time upon professional activities. The list of projects undertaken or proposed in the field of work study indicates that, to some extent, this kind of activity is being taken care of by the hospital service work-study units.

EFFICIENCY OF THE HOSPITAL AS A SYSTEM.—"Hospitals have come fairly rapidly through a revolutionary period of reorientation of functions. Broadly speaking, the function of hospital organization in the past was to provide premises and nursing service for the individual physician or surgeon to do his work. Today, technological development and the growth of knowledge, which have made increasing specialization necessary, make for increasing interdependence of personnel and dependence of all upon common service departments. Formerly, each unit could perhaps be its own therapeutic community; today, if there is a therapeutic community at all, it has to be the hospital as a whole.

"The large question in hospital service today is directed towards this last point. To what extent has interdependence been accepted in anything except a technical sense? How far is the hospital community functioning, in fact, as a common enterprise with commonly accepted goals? The question could, of course, be widened still further: how far is the hospital functioning with

other parts of the health service towards mutually acceptable objectives?" (11)

We are dealing here with questions of administration in an enlarged, expanding, complex field of interrelationships. On this inherently very difficult and extremely important subject, the only major work in progress is that of Professor Revans (40) and his colleagues from Manchester. He has attempted to examine some problems by translating certain concepts from industrial sociology to the hospital field. He has used labor turnover, sickness absence, and accident rates among the nursing staff of hospitals as indicators of greater or lesser coherence within the organization of the hospitals concerned. For example, in one hospital group he studied, where the nurses' training was divided into 3-month periods spent alternately in the large parent hospital and smaller satellite hospitals, he has shown that the sickness absence is systematically more frequent in spells and longer in duration when the girls are in the parent hospital. This, he suggests, is because the girls have greater difficulty in perceiving intelligibility in their work in the much larger mother hospital. "Life in the mother hospitals seems to be less intelligible because the student feels more alienated. The lack of intelligibility in times of crisis leads to strain; strain leads to physical breakdown. This process is accelerated when strain or anxiety is unrelieved by the emotional support of a senior or more responsible person."

In another group of hospitals, Professor Revans' team was invited to study the wastage rates of student nurses. Near Manchester five acute, general hospitals of equal size were chosen in towns similar in economic status and social ecology. The records were examined for a period of 5 years and the hospitals ranked in order of student-nurse wastage rate; i.e., the rate at which nurses left before completing their training. He then studied the wastage of other staff members, including matrons, ward sisters, staff nurses, assistant nurses, and domestics. He found the pattern of wastage similar in all staff grades and the ranking of the hospitals for wastage rates was closely correlated across the grades. Revans postulated that these high wastage rates arose from a defect inherent in the hospital communications system, probably affecting all communications including that between nursing staff and doctors and all hospital activities including care of the patients. To examine this hypothesis, he studied the duration of stay for certain diagnostic categories in these hospitals and showed that on average it was consistently greater in the hospitals with the high wastage rates.

His team has also studied 15 large, acute, nonteaching hospitals outside London, using the ward sister (head nurse of the ward unit) as an indicator of the communications system within the hospital. The ward sisters were interviewed and their attitudes to subordinates and superiors rated on a scale for perception and understanding of problems. The hospitals were ranked according to the average rank order of perceptiveness of the sisters and examined for the statistics of staff stability and duration of patient stay. It was found that staff stability was greatest and patient duration of stay shortest in those hospitals characterized by a high level of perceptiveness among the sisters.

From all this evidence, Revans (41) postulates a factor of transparency/opaqueness in the communications system for which size of hospital is less than 50 percent responsible, the major component being some element indigenous to that particular hospital. He believes that whatever it is that determines the degree of transparency/opaqueness, it probably runs through the whole hospital system and may well stem from the top echelons of management and administrative and medical staff.

Revans (42) now wishes to explore in more detail this postulated quality of transparency/opaqueness. He plans to do so in an experimental situation where he will be closely concerned with a hospital organization as investigator and therapist. His plan is to attempt to delineate the problems and to test their existence in a therapeutic problem-solving situation. He is already organized to start the next stage of his work in a large hospital in Birmingham with the support of the Nuffield Provincial Hospitals Trust.

In the general field the only other study which I will mention is one carried out by Sofer, a sociologist, as part of the work of the Acton Trust team. The Acton Trust studies, although not research in the normally accepted sense, are valuable systematic examinations of the administrative dynamics of the National Health Service made by independent investigators using observational and narrative techniques.

Sofer, using informal interview and case-study approaches, considered three hospitals in the

period 1952–1954; that is, comparatively soon after the changeover to the National Health Service. To focus more clearly on the impact of change, he concentrated on the changing authority, responsibilities, and status of the three chief officers in each case—the heads of the medical, nursing, and administrative services.

In each hospital studied, incorporation into the new national service had meant a different thing to the staff. Its impact and implications had varied according to earlier relationships with external authority, the previous internal structure of the unit, and the specific changes which the new system had imposed on that structure. Sofer found two sets of problems: first, those inherent in the working of large-scale organizations (such as centralization and decentralization and the fitting of specialists into the general framework of administrative organization); and second, those arising from the transfer to a national hospital service.

The term "therapeutic community," used earlier in this section, is the concept of a medical-care institution such as the hospital having some corporate therapeutic aspect in addition to any specific therapy laid down in the regime of the individual patient. Despite the importance of the concept—if it is valid—little or no work has been done to study it except in the field of psychiatry. Maxwell Jones (44), the psychiatrist who popularized the term, has given it a controversial special connotation of his own. His experiment in the Belmont Hospital was not controlled research but work in the nature of a case demonstration of how to turn the whole focus of an institution, and all members of it, both staff and patients, into active participants and contributors to a therapeutic situation.

Research on Hospital Services Designed To Limit the Use of Beds

This is a most interesting field of work containing for investigation two main problems arising from the present division of medical labor and responsibility in Britain. First is the need to find the best method of providing for ambulant and semi-ambulant patients the technical resources which can only be made available in hospitals. The British hospital service has had to adjust itself without a major building program to a situation where medical hotel-keeping is the lesser part of its work in terms of the numbers of patients investigated. It is scarcely surprising that this drastic shift in workload without accompanying physical planning has led to a good deal of stress and strain. Second is the need for a better definition of the shared responsibility of hospital and general practitioner.

So a number of studies have been carried out or are in progress surveying the boundaries of care provision which lie between the hospital and the domiciliary services. The hospital outpatient department is an obvious area for study. Let me remind you of the simple mechanics of the situation. Hospitals arrange a variety of general and special clinics or consulting services, at which patients are seen by specialists and their junior staff, and often the patients will be referred for further investigations by the laboratory, X-ray, and other departments. Patients may be seen on an appointment system, and this practice is increasing; but there are still many clinics to which the patients come without specific appointments. By long-established professional custom, now embodied in Health Service regulations, patients other than casuals are seen by consultants only if referred by a general practitioner: so they have been through one medical screen before coming to hospital. The field forces of attraction are complex. Clearly there are certain kinds of expertise and technology which can only be made available on our definitions by the hospital. But other patients may be sent by the general practitioner simply because there is some kind of examination (e.g., laboratory or radiological) which he cannot carry out himself but which he is perfectly competent to assess.

Increasingly the hospitals are allowing the general practitioner to use these facilities without requiring him to refer his patient to another doctor before the test can be authorized; it then becomes a matter of interest to discover which general practitioners avail themselves of these direct access facilities (45). The question of incentives or their lack, enters into the equation in varying degree but to an unknown extent. There is no financial incentive to the general practitioner to keep his patient away from hospital—this may be good. On the other hand there may be a kind of incentive (since he gets paid the same amount any-

way) to get rid of a troublesome patient by sending him to hospital—and this may be bad.

USE OF OUTPATIENT FACILITIES.—Plainly, from our point of view, this situation merits study: study to identify the characteristics, medical and otherwise, and the needs of this large and much increased group of patients; study to try to understand better the dynamics of the relationship between hospital and general practitioner. We want to know such things as: how many patients there are from a given population; their diagnoses by age and sex; their treatment; how many were admitted as inpatients; how often they attended the outpatient clinic; who saw them there; what medical benefit they derived from their attendance; how long they had to wait for an appointment; how long they had to wait at the clinic to be seen by a doctor; who was the general practitioner; how many patients he refers to hospitals in a year compared with other general practitioners; what kind of case report he sent with the patient to explain his reason for the referral; what kind of report the hospital sent to him; does he think the hospital helped his patient; does he think the hospital held on to his patient too long.

Barr (46), from the Oxford Regional Board, has made a substantial beginning in this field. He notes that, including "casualties," some 13 million new outpatients were seen during 1959 in England and Wales, making over 40 million attendances. The number of inpatients treated in the same period was 4 million, so that new outpatients outnumbered inpatients by some 3 to 1, while the ratio of outpatient attendances to inpatients was some 13 to 1. Related to population, his means that one person in every four attended he outpatient department each year (but this figure may be exaggerated by the statistics).

Slightly fewer than half of the new patients ttended "casualty" departments.

From the evidence, the volume of outpatient ork appears to be increasing. In the decade 950–1959 the total number of new outpatient referrals (excluding casualties) increased by some 5 percent. In the same period, discharges from ospital increased by 27 percent. Coupled with he growth in volume has been a marked expansion n the range of outpatient techniques and treatments.

The Oxford Unit made a 3-month factfinding inquiry of certain outpatient departments in Reading based on information collected routinely in the case notes. The study was thought of as a reconnaissance to supplement the scanty knowledge of the Board and to prepare the way for further investigation.

The annual outpatient referral rate for Reading was established at 69 per 1,000 population. About one-quarter of the patients visited the clinic once only; one-half attended three or more times, and one-quarter attended at least five times. For patients with multiple attendances, the average period of time over which the visits were spread was 6 months.

One-third of the patients were referred to one or more of such services as pathology, radiology, physiotherapy. One-fifth were referred to more than one specialty. About one in seven patients had to wait 5 or more weeks for an outpatient appointment; over one-quarter of the sample were admitted to hospital. After treatment as outpatients or as outpatients and inpatients, 60.5 percent were discharged as requiring no further medical care. Approximately 12 percent were referred to the general practitioner with specific treatment recommended; 2 percent were referred with an opinion only; 3.8 percent were sent to another hospital; 8.5 percent ceased to attend the clinic of their own accord.

The amount of referral by different general practitioners varied widely but was not correlated with either the size of practice or the doctor's age. The proportion of patients referred who were admitted as inpatients was used as a very crude estimate of the general practitioner's acuity. Of the outpatients, about one-quarter were admitted. For different general practitioners the proportion varied from under one-tenth to nearly one-half.

Barr and the Oxford Unit are continuing to work in this field. He wishes to clarify the true role of the hospital in outpatient work, and thinks that looking more closely at the spectrum of attendance will be useful. A careful appreciation of the single attendance cases might indicate: what circumstances really require these patients to attend the hospital; how many might have been diagnosed and treated solely by the general practitioner given better services to supplement his clinical assessment. Other basic questions are: can the resources which the general practitioner needs be provided by the hospital service either in terms of facilities or postgraduate education? For the patient who attends over a long period, can

better methods of working together by hospital and general practitioner be devised? Such methods would presuppose greatly improved communications between the hospital and the outside doctor. Can delay in obtaining an outpatient appointment be drastically reduced?

ROLE OF THE GENERAL PRACTITIONER.—A more difficult, yet fundamental, problem is what motivates the general practitioner to send a patient to hospital. The quick answer is to obtain a diagnosis, advice, and treatment; but this leaves unexplained wide differences in referral rates between doctors. If the only reason for referral was to obtain diagnosis or treatment, then one would expect the proportion of patients, standardized for age and sex, not to fluctuate between doctors by more than the limits of chance. This does not hold good. Doctors differ widely in the number of patients they refer to hospital and a study of this particular aspect is essential to the fuller understanding of the basic demand for hospital facilities.

Barr suggests two further matters for study: The increased use of outpatient departments for preliminary investigation of patients to be admitted to hospital; and the possibility of permitting the general practitioner direct access to hospital waiting lists for certain conditions, e.g., hernia requiring operating.

Priest (47), a hospital clinician, reviewed his case notes of 1,000 consecutive outpatients referred to a general medical clinic in a medium-sized, provincial, non-teaching hospital. He, too, noted the wide range of referral rates among general practitioners, and observed a markedly higher referral rate among urban as compared with rural practitioners; he states that "the influence of easy access to hospital is evident."

In Guys Hospital, Acheson, Barker, and Butterfield (48) made a study of general practitioner use of outpatient services by looking at the choice preferences of practitioners in an area containing several hospitals to which the practitioner may send his patients. The biggest factor determining the doctor's decision was the patient's own preference. The patients' preference tended toward the teaching hospital, but the practitioners' toward the non-teaching hospital because it was more cooperative and offered direct access to diagnostic services. "Although in the area studied there is little personal relationship between family doctors and hospital staff, it is clear from the answers . . . that there is in many practices a to establish such a relationship." The Guy pital group are making further intensive s of the outpatient service of their own ho

Fry (49) examined the use of the outp department from the standpoint of a genera titioner by analyzing his own referrals to ho throughout a year. Out of a practice of 5,5 tients, which is the responsibility of two do 7.5 percent were referred during the year t pital; of these, 3.7 percent were admitted as tients, 3.8 percent as outpatients. In addit percent were sent direct for radiology, and cent for pathologic investigation. He conc that the three main reasons why the general titioner refers patients to hospital are: for cor investigation requiring special skills and ap tus; for a second opinion when the general p tioner is unable to reach a diagnosis; for treat beyond the means of the general practitioner v ing in his consulting rooms or in the pat home.

A number of other studies are in pro Logan and Forsyth (50) of Manchester are ing a study of outpatient services in 20 areas t cover the range of problems and methods. Ba (51) in Aberdeen is studying the nature and e of contact between the practitioners in the n east of Scotland and the hospitals which them, with a view to delineating the factors v determine the doctor's use of the hospital.

Scott, Gilmore, and I are making a s of Edinburgh outpatient services and the pat of general practitioner usage of them.

CASUALTY SERVICE.—The specia tion of the outpatient service called the Cas Service has mixed origins, being originall direct access service for ambulant patients wh no general practitioner, as well as the rece area for injuries and the treatment area fo juries not requiring admission. The latter tions are its primary concern in the eyes o Health Service, but the old direct access pa have continued to leak into it around the of the general practitioner service. It is v recognized to be the Cinderella service of th pital—understaffed, underprivileged, and worked. Recently fairy godmothers have to examine its needs and plead its cause.

Mestitz (52) discussed a group of "medical" casualty patients seen at the Mid Hospital in London. In 27 percent, no o

ause of the patient's complaint could be identified. L. Fry (53) analyzed 5,000 attendances at a South East London hospital casualty department. Sixty ercent were new attendances, of which nearly two-hirds were made by casual attenders not referred y a practitioner. Only one-half of these new atients were trauma cases. In that hospital the nnual number of new casuals had doubled over he previous 12 years, despite the fact that every-ody now has a general practitioner. He con-ludes: "The present-day casualty department has o specific function and runs as a 'general prac-ice.' It is misused to a considerable extent both y the public and by their doctors!"

A 5-month survey of all Portsmouth's (54) asualty services showed that a mass of trivial ma-erial was dealt with, and at least one-quarter of he cases should have been seen and treated by their general practitioner. The reduction of pressure n the casualty department would then allow the imited hospital staff to do its proper job effec-ively.

Blackwell (55) in an interesting paper re-viewed the work of the casualty department at Guys Hospital, which has continued to some ex-ent its traditional function as the neighborhood doctor. He concluded that nearly one-third of those attending the department instead of their own doctor did so for social or psychological as well as medical reasons. More than half the "un-ecessary attendances" were in this group.

Although in 1958 there were in England nd Wales some 11 million casualty attendances, a central or regional policy on this part of the hos-ital service was still lacking. The Nuffield Pro-incial Hospitals Trust (56) decided to attack the roblem using its own method of study. They de-ined desirable criteria of provision and a rating scale for each main element of the service (e.g., nedical staffing, nursing staffing, accommodations, equipment, patient comfort, records, control of nfection, rehabilitation, and resettlement).

A team with expert surgical members vis-ted each department in the study and rated each lement on the scale. They found wide variations n standards with severe deficiencies at the lower nd of the scale and many anomalies in the use of his part in relation to other parts of the National Health Service. A substantial number of recom-nendations were made. That such criticisms are ffective is shown by the publication in 1961 by he Department of Health for Scotland (57) of its report on Provision and Design of Casualty and Accident Departments, based on careful in-vestigations made in a number of casualty centers by the Hospital Development Unit and Work Study Group of the Department.

Future trends in the outpatient service will be for the more trivial activities to wither and die, and for some of the major activities to develop into the concept of the day hospital. There have been interesting experiments in day hospital pro-vision particularly in the geriatric field but, as yet, no serious evaluation has been made. The report of Stephens and Dudley (58) on outpatient sur-gery for hernia cases suggests that the day hospital concept may develop for the acute sick also. Night hospitals in the psychiatric field, and 5-day hospi-tals which shut down at the weekend to solve staff-ing problems, are other experiments envisaged in the effort to break away from the hotel-hospital concept.

Research on Medical-Care Services To Keep Patients Out of Hospital

There are two reasons for being interested in this question: one is the economic reason al-ready discussed. The economic argument seems logical in reference to most kinds of acute sickness. The costs of providing and maintaining a high-standard bed are so great that only good medical reasons can justify its use. But the same argu-ment does not necessarily hold good in the field of chronic and mental illness. Along the potential scale of provision of domiciliary support, there must come a point where in sheer economic terms it is cheaper to centralize costs in an institution than to provide everything for one patient in his home. What sometimes appears as economy may simply be transfer of cost to someone else. What is apt to be forgotten in the equation is the eco-nomic loss of the wage earner who stays at home to look after the invalid.

The other reason for interest is the propo-sition to which most people would subscribe that hospitals are good places to keep out of anyway. In other words, ambulatory medical care, other things being equal, is better medical care. This may sound absurdly platitudinous to you, but I believe it is a statement worth repeating in the

U.K., for we show strong tendencies to undernourish our domiciliary relative to our hospital services.

If words mean anything, the general practitioner as the center of the domiciliary care service ought to be the key figure in our Health Service. In fact, he is not, but it is difficult to assess the change in his position since 1948. We had in the early days of the service the survey reports of Collings, Hadfield, and Taylor (45) casting light into some dark corners of our general practitioner service. Since then a striking interest has arisen in the well-being of general practice, of which the College of General Practice founded 10 years ago is at once a symptom and a cause. In this sense there is marked improvement. But of technical advance in general practice there is little sign—and for the simple reason that we have not yet found a means within our terms of reference to bring about an industrial revolution for the general practitioner. The Health Center was intended to provide this grouping and technical support, but the idea has not yet got off the ground. The general practitioner is excluded from the hospital, so he continues to operate at cottage-industry level, underfinanced in terms of capital equipment and auxiliary support. At the same time a deep and widespread feeling exists that the personal relationship and responsibility for continuity of care which our system of general practice permits is something worth preserving. Our task is to reconcile the social advantages of general practice with technical advance. Until we do this, our services outside the hospital will be below the potential of which they are capable, and will continually require support from the hospital to compensate for this.

RESEARCH ON GENERAL PRACTICE.—In response to the challenge in this situation, there has been a great revival of interest in research based on general practice. The General Register Office, with its great General Practice Morbidity inquiries, has given the lead, while the College of General Practice has followed and the Medical Research Council has set up a General Practice Research Committee. Most of this research, however, is concerned with epidemiology and control trials, and failure to develop operational studies from within general practice is significant. There is within the Health Service no incentive to efficiency studies in general practice, equivalent to the economic forces driving the hospital service in that direction. Nor is there an administrative unit within the general practice set-up able to initiate the necessary action. Each general practitioner is an individual entrepreneur in contract with his local Executive Council. Cottage industry does not breed operational research.

It is not surprising then to find that the pressure slowly building up to force us to look again much more carefully at the work and organization of general practice is coming from the hospital. It is the pressure to keep patients out of hospital which will gradually lead to a reassessment of the domicilary services. In the meantime the operational studies developing at the outpatient department and other boundary marks of the hospital are all potentially just as much studies of general practice as of hospitals.

EFFECTIVENESS OF HOSPITAL TREATMENT.—Preventing the return of the hospital patient after discharge is an aspect of keeping people out of hospital which has received some attention in the U.K. We have no true picture of the extent of readmission, but we have plenty of glimpses which suggest that it must be a large component of hospitalization. By and large, there is a curious lack of interest in assessing the effectiveness of hospital treatment. No doubt many hospital admissions are sufficiently grave to appear justified in terms of the short-term result. The hospital structure itself, too, tends to foster a short-term view. When the patient disappears through the door with "cured" or "improved" or "stablized" written on his record, that may appear to be the final verdict, because the patient is lost to view. But the true situation may be quite different.

Followup studies can be a simple, if imprecise, method of keeping some kind of sense of perspective on the results of hospital treatment. They may shatter complacency.

In 1945, Brown and Carling (59) reported from Professor Witt's unit in Oxford on 150 consecutive patients followed up 12 to 18 months after discharge from a general medical ward in a teaching hospital. Only 26 percent of the patients had been cured, though 48 percent had returned to full-time work and 20 percent were doing part-time work. Four years later there was another report from the same unit (60). In the interval an almoner (medicosocial worker) had joined the team and they hoped to be able to judge whether

his had improved results. This time 38 percent vere judged to have been cured, 37 percent were till suffering from the disease which had caused dmission, 17 percent were dead. On the other and, 60 percent had returned to full-time work, nd only 6.5 percent were unable to follow their sual employment. In 1949, Pemberton and Smith (61) undertook a study in Sheffield to discover to vhat extent male patients aged 50–64 admitted to he general medical and surgical wards of a teaching hospital were subsequently able to return to vork. They were followed up for an average of 3 months after discharge from hospital. Thirty-hree percent of the medical and 59 percent of the surgical patients were back at their former work; 38 percent of the medical and 15 percent of the surgical patients had died in hospital or before the followup.

In 1954, Ferguson and MacPhail (62) in Glasgow published their report on 705 men discharged from medical wards of a teaching hospital in Glasgow and followed up for 2 years. At the end of 2 years, 171 were dead; 129 had had one or more spells of hospital treatment since their discharge. Of 474 interviewed at home, 111 were judged to be cured; 195 had continued to improve; 106 were still far from well; 64 had deteriorated; 106 had not worked since leaving hospital; 50 had worked for less than one of the two years. The worst results were seen among the unskilled laborers in the lowest socioeconomic groups.

A sequel to this study was published last year (63). The survey was extended beyond Glasgow to find whether the poor results previously discovered were repeated elsewhere and studies along similar but not identical lines were made in Dundee and Aberdeen. In Glasgow, in addition to the followup, a deliberate attempt was made, by providing an advisory aftercare service for the discharged patients, to improve results. Aberdeen, a much less industrialized city with a considerable catchment area of rural population, had somewhat better results than the other centers but, broadly speaking, the same gloomy picture was again revealed. The advisory aftercare service provided in Glasgow seemed to have made little or no difference to results. Ferguson reported that the Glasgow study makes it clear that, valuable as they may be for short-term aid, the social services at present available will not greatly affect the results of hospital care. He states, however, that better social and rehabilitation services might lead to improvement.

Looking at the System as a Whole

We have made a little progress in extending our knowledge of facets of our hospital service, but we are far from finding techniques for examining its functions as a system. Experiments proposed or in progress to use computer techniques and record linkage studies are a step in this direction. For example, a pilot project has been started in Oxford to test the feasibility of linking together records of births, confinements, hospital discharges, and deaths on and after January 1, 1962. At present, manual and IBM sorting is used. It is intended, if the pilot study proves successful, to process the data on electronic tape (64).

In the meantime, perhaps the simplest way of assessing what happens within our complex systems of medical care is to ask the consumer. The patient in the hospital bed is in a sense at the center of one network of the system and may be a useful informant on many aspects of hospital functioning.

McGhee (65) made an interesting study based on interviews with patients before and after discharge from hospital. Her intention was to throw light upon nursing care as seen through the eyes of the patient. But, in fact, insights were gained into many aspects of the hospital's work. The patient proved to be surprisingly tolerant of hospital discomforts, but there seemed to be failures of communication in the matter of giving him real understanding of his condition and his future needs and behavior in relation to it.

A similar but smaller study has been produced from Manchester (66).

The Institute of Community Studies (67) in London is at present carrying out a questionnaire and interview study to examine the relationships (particularly the communications) between patients, hospitals, and general practitioners within the Health Service as a whole. The technique employed was a postal canvass of a population sample of 29,000 to identify among them those who had been patients in hospital during the previous 6 months: 739 persons who had been patients were

interviewed. In addition, a sample of 124 general practitioners gave their views on the relationship between general practitioners and hospitals. Preliminary reports on the study suggest again that failure to communicate adequately with the patients is often one of the shortcomings of the system.

P.E.P. (Political and Economic Planning) (68), a research group concerned with a wide variety of social issues, has just published a report on Family Needs and the Social Services, the result of a survey to find out the feelings and opinions of people about the Health and Social Services. The sample is not representative of the whole country but only of the Greater London area and interviews were confined to families with children under 16. An interesting, if inevitably sketchy, picture emerges on a very large canvas in which the Health Service is clearly shown as by far the most used and appreciated of the social services. There are criticisms, but not many. Certainly not enough, for surely the best hope for the future well-being of the Service is an intelligently critical public and a profession willing to educate the public on the right points to criticize.

THE CHAIRMAN:

I thank you very much, Dr. Brotherston. It is exactly the review we had hoped to be possible and you did have a tremendous amount of ground to cover. I appreciate all the preparation that must have been behind it, in spite of your familiarity with what was going on in the various investigative areas.

I would now like to call on Dr. Davies for some comments.

A New Look at Hospitals in Great Britain

DR. J. O. F. DAVIES:

Mr. Chairman, I was very full of admiration yesterday of the way in which the various groups of speakers interdigitated themselves. My task is to complement what Prof. Brotherston has said; I have jotted down a few notes and I propose to speak to them.

At the moment, I am on loan to the Ministry of Health. This important department has, over the last few years, undergone a very substantial change. It has a new chief medical officer, a new permanent secretary, a new minister, and there is a new look about the department.

We now have a 10-year hospital building program and we are about to abandon the previous practice of the Department on Hospitals of critically examining plans and making comments on them. The picture has now changed and we have taken a leaf out of the book of the Department of Health and Welfare and we produce guide material. This guide material sets out the best accepted practice. It is sent in draft form to all our regional hospital boards, who can comment and influence the final draft. After completion, this is nevertheless still guide material and nobody is expected to adhere to it meticulously. However, they are expected to keep within cost limits unless they have good reasons for doing otherwise.

People can still come up with new ideas and, of course, it is important that they should be able to do that.

Having produced the guide material, the officers of the Ministry have informal discussions with those who have a hospital project in hand. When those informal discussions result in an agreement, provided the costs are reasonable, the hospital authority can then get on with the job. Therefore, although the Department still does exert a fair amount of influence, which it should, since it is a kind of repository of experts, the regional boards are very much on their own insofar as actual construction is concerned.

Now, this 10-year plan, so-called, isn't a 10-year plan—it is a rolling plan for every 10 years and it is, in fact, subject to review annually. If there is doubt on the part of anybody that the hospital plans are not going to function in the way forecast, then these points are made known at the annual review when the main plan may be revised.

CONSIDERING THE PATIENT.—Our Minister has been tremendously keen, in our hospitalization, to introduce and accentuate what he calls the "human element" and he has taken a very great deal of trouble himself to push various factors in relation to the operation of the hospital—such as the reorganization of the inpatient day, so that the patient isn't wakened at dawn and isn't sent to bed very early and is treated in kindly fashion in these matters. Two other matters have been "noise in hospitals" and human relations in

obstetrics on which the Minister received a report from one of his advisory committees.

The Minister has a keen interest in patients not waiting for long periods in outpatient departments, and currently we are studying the appointment systems that hospitals use. You will be surprised how inefficient some hospitals can be in devising appointment systems. When cursorily examined one can tell right from the very start that the patient at the end of the list is going to have a long waiting period. We have ideas about appointment systems which get the patient to the specialist in a reasonable time.

We have also in the Department a small group fostering management studies. Professor Brotherston has mentioned the Acton Society. This group was highly critical of the Department in that it did not have an "intelligence" section, a section that brought together knowledge, distilled it, and put the information back to hospitals. The Department does now have the embryo of such a section and it will be responsible for initiating and catalyzing a number of studies.

The Ministry now intends to set aside a sum of money to foster research into management and other operations. It may seem strange to you that a department which dispenses about eight hundred million pounds annually does not keep back half a million for itself and, indeed, from the first of April next, they will have a very small sum to foster mainly operational research experiments.

There are a number of studies going on in the organization relative to management of hospitals. Practically every department in a hospital operates in a way different from that which is supposed. The more studies there are, the more it is seen that what actually goes on differs in some ways from what is intended. The more studies that lead intention to action the better.

MANAGEMENT SURVEYS.—In England we plan to define responsibility for hospital management a little better than has been done in the past. There are regional hospital boards and, below them, committees of management. The committees of management are, in fact, legal entities in their own right, and there has been a lack of definition as to who does what. It is hoped that better management will result from a survey of this field.

We are attempting to provide training in and to assure that our management gularly will have certain information before them at their meetings. These voluntarily serving members will be what you would call trustees of your hospital. Our aim is to attempt to interest them by providing them with information as to how workloads are being dealt with, how they are assessed, and to give them opportunities to devise means of ascertaining if their resources are in fact employed to the best advantage; how their performance should be judged, and how they can compare it with that of others; and how they should be looking ahead in relation to forward planning in a management sense.

The department will also be collecting new ideas, assessing them and, if need be, carrying out "organization and method" experiments or surveys, either directly or by persuading the regional hospital board or management committee to do it as agent.

Of course, this may strike you as being very simple, but it is a part of our new look because we have not done this before.

We shall also aim to try to establish norms of good practice. These are, of course, very difficult in some ways to define though easy to recognize. Our hope is that we shall be able to provide a number of factors that will enable hospital management to be carried out much more efficiently than we believe it to be at the moment.

Having done all this, we hope to have a rather better followup system. We will have our regional hospital boards supporting our committees on management in their attempts to run the hospital more efficiently.

BED USE.—One of the departmental studies includes a look at a half-dozen hospitals, to see how they use their beds. A small team in the Department, with the collaboration of the hospitals, will spend a few days in the hospitals finding out just what goes on, which we hope will serve a very useful function.

Some simple questions—as to what arrangements there were for keeping beds used under review, and what information they used—showed that their statistics were not always of high quality. Of the six hospitals, two of them thought that they had good statistical systems, but they were too complicated for the trustees of the hospital to understand. Our aim here would be to attempt to devise a simple form that will provide sensible information which the trustees can look at month after month and then ask questions about what is going on.

One of the other questions was on the reallocation of beds, as between disciplines, to meet varied demands. And I believe that our somewhat rigid allocation of beds to our specialists is in some ways one of the worst features. If we could have a situation in which we had allocated X beds to a specialist with a lease, as it were, on Y beds, we would have a very much more flexible system which would enable us to deal with situations more expeditiously. At the moment there is a certain amount of bed exchange, of course. If one group gets hard pressed, they borrow beds from others.

There is also a certain amount of seasonal exchange. This is something that, within the total, should make bed allocation very much more flexible.

This same little study inquired into the procedure for dealing with emergencies, which must be admitted to hospital. It was quite obvious that there were a number of hospitals over-insuring against the number of likely emergencies. A record, over a period of time, can allow one to predict what the pattern is going to be. If the number of beds left empty is accurately related to emergency needs, then beds will not be left empty which can be used for treatment.

Other studies have shown that patients were being admitted well in advance of the day for operation or, alternatively, if coming in for investigation, without the arrangement for the investigation having previously been worked out. This meant that the patient might well be occupying a bed for no useful purpose. The promotion of techniques whereby this amount of wastage does not come about is the same as providing more beds.

One of the serious problems for a hospital is the patients for whom nothing further can be done, who come into the category of the chronic sick patient. Acute beds may be blocked by inability to discharge these patients. This is quite a problem, particularly in the case of an accident ward with a large number of fractures of the femur in old women. We do have a problem in this area, and in some parts of the country the care of the chronic sick is well-organized. However, I should be misleading you if I led you to believe that every area was of a high standard. The adequacy of the care of the chronic or aged sick patient depends upon the dynamic policies of the physician in charge of the unit, on his ability to do battle with his clinical colleagues, because most clinicians who look after the patients in acute beds really do not have much interest in the patient when he or she becomes geriatric. I see relatively little future for geriatric departments unless they are in the care of a man who regards this as his life's work and is prepared to put all his energies into it and to do battle with regional hospital boards, the committees of management, his colleagues, the whole lot, to get the things he wants. Under these dynamic circumstances, patients get rehabilitated and often discharged home and a good service is rendered. In England and Wales 80 percent of the aged sick are in their own homes. The hospital service needs to treat the remaining 20 percent in hospital. It does become a problem if movement of patients fails to occur. If it is possible to make a light shift to home care, the problem is eased.

One individual I know is doing a very good job along this line. He undertakes to share the responsibilities with the relatives and he will readily readmit patients in any social or medical crisis, whatever it is. He takes the critical factor out of the situation within 24 hours, and with this kind of assurance relatives begin to cope with their old folk in an entirely different way. As you know, we have a home care service provided by general practitioners and by local authorities, as a result of which, we are better able to look after these people. The secret of keeping some of these old patients out of hospital is shared responsibility, sharing with the family, supported by domiciliary services.

The local authorities in England and Wales are developing a 10-year plan which will shortly be published, showing how their medical care services will be expanded. This, it is hoped, will complement the hospital plan and enable better use to be made of hospital beds.

DURATION OF STAY.—Now, one of the things that I have been interested in is duration of stay in the hospital. It seems to me this is absolutely critical. We have always been impressed with the short duration of stay you have in your hospitals. Of course, whether you keep the patients for 10 or 15 days does make a tremendous difference in the number of beds you require. Surgeons vary widely in England and Wales in their ideas of average duration of stay. A group of six at one hospital recently sought the help of a statistician who asked their opinion. One of them gave a figure of 9 days, another 12, another 15, the fourth said about 18, and the fifth said 21. This was for the same class of patients. Now, it is very

ifficult under those circumstances to know what ıe right thing to do is, and so this statistician ıite wisely settled on about 12.

I am now trying a new study in which we ave a dozen surgeons treating a hundred patients ıffering from a comparable condition to find out recisely what happened to them, and, as a result, hope to show some marked differences. The kelihood is that the patient with the short dura-on of stay has done no less well than others but ıis needs to be demonstrated. One can then only ope that it will act as a challenge to those sur-eons who want more beds than they now have. he regions with relatively few acute or short-rm beds have much shorter average durations of ay than the hospital regions which are more gen-ously supplied. My particular region, which is ıe Oxford region, does have, in fact, less beds ıan some of the other regions. Our average ıration of stay, therefore, as you can expect, is ery much shorter. I am personally quite con-nced that duration of stay is a function of beds ailable.

HOSPITAL SIZE.—Our new hospital an involves the provision of quite large hospitals. e aim to provide with a good general hospital, a riatric service and a psychiatric service. This es not mean that we are going to house all geri-ric and psychiatric patients at the main hospital e, but we will have a fair percentage of them. me of the fairly long-term geriatric patients ay require to be out in an annex. There are und to be some long-term psychiatric patients ıo will not be dealt with in the general hospitals. ıe intention is, however, to put psychiatry ongside general medicine. We think that gen-al medicine will learn a lot from psychiatry. ıey have been divorced and separated much too ıg.

This likewise means that our hospitals are ing to be sizeable. We have not set any limits size. For a population of 150,000 people we e likely to require a hospital of from 600 to 800 ds. There will be larger hospitals serving ger populations. The intention is to develop r outpatient departments and make them really ective instruments. We intend to build them nerously. We propose to give them all the tech-al facilities they require. We propose to give m what we call day beds—to which the patient ı be admitted for the day or night for investi-ion desired that day. If the surgeon desires to do outpatient surgery, he can do it and have a bed available for the patient to rest before going home the same day.

We have one or two very outstanding examples of outpatient surgery. Farquharson of Edinburgh has, in the last 8 years, done 4,000 operations on patients with hernia or varicose veins needing stripping and sent them home the same day. He has, however, not been emulated by any large number of people in Great Britain, though many keep their patients for one or two days only. It is interesting to note that of a series of Aberdeen patients operated on by Stephens and Dudley who were first asked whether they desired to be operated on as inpatients or outpatients, nearly all said they would prefer to be operated on as outpatients. This meant they were operated on and sent home on the same day. No complications or untoward result came from this series of cases.

QUALITY OF CARE.—There is just one other point that I would like to touch on and that is something that was raised this morning. One of the speakers was talking about collective control as being likely to result in improvement in quality of surgery. This was, of course, a problem which we were faced with when the National Health Service came into being. We did have general practitioners undertaking surgery which was not of the quality that you would expect from consultants in their field. By consultants, I mean a Fellow of the Royal College of Surgeons of England and who, in addition to this, also had 6 or more years of training. This does mean that all of our consultants are of a high standard at the time we appoint them.

In the early days of the Service we did put an end to a good deal of the general practitioner's surgery and, as you know, there was a cry to the effect that we had thrown the general practitioners out of the hospitals. Very many of our general practitioners continue to work in the hospitals and I think in the next few years more will work there than ever before, in such capacity as they may be trained for. However, the point is that we acted as the instigators of collective control. Any general practitioner who undertakes surgical procedures in the Health Service now, and some do, does it now on the responsibility of the consultant surgeon. I think the quality of our medical service is the better for it.

In quality of care, we have not done very much in the way of studies, but we have our ears to

the ground and we have been terribly interested in some of the studies going on over here. I am hoping that within the next few years we can catalyze a number of qualitative studies in our country also.

DISCUSSION

THE CHAIRMAN:

Both you and Dr. Brotherston, from what you have reported, are far too modest in the amount of research going on in your country. Are there any questions?

MR. FUCHS:

I would like to pursue a line of questioning that I opened up with Dr. Brotherston before. This refers to the demand for hospital and health services and the economics of the term demand.

It is a matter of observation that different people like to spend their incomes in different ways. Some people will spend more for motor cars, some more for television sets, whiskey, food, or what have you. The thing I am wondering about in the hospital and medical service described is this. Is there a provision for those people who want to spend more of their income for better medical care or hospital services to do so? Has there been any research done to determine what the extent of the demand might be, or has there been a policy decision made that everyone should get the same care and quality of medical care regardless of how they want to allocate their income?

DR. DAVIES:

I think I had better take this one.

All of the hospitals have private beds and there is nothing to prevent the patient entering a private bed and paying for his care, selecting the surgeon on whom he wants to depend. The ordinary nonprivate patient cannot select his surgeon. He may be sent by his general practitioner to a particular surgeon who may well see him and operate upon him. But the operation may be carried out by another member of the surgical team in the case of the ordinary patient, on the responsibility of the consultant. As a private patient, however, one can enter into a contract with a particular surgeon and pay him directly.

As to the extent of use of private rooms, we find that their low occupancy is a controversial point with the administration. A hospital, when it is short on emergency beds, can always put a patient into a private room without charge. Were it not for the fact that this could be done, the occupancy rate would be still worse.

DR. BROTHERSTON:

I have one comment. I think you can take it that our concept of private medicine is that the patient is purchasing an amenity, not quality of care. We would not like to think in the Health Service that you can purchase better surgery by being a private patient. You can, however, purchase more frequent visits from the relatives, and you can purchase some privileges and that kind of thing.

MR. McNERNEY:

Have you looked into whether the surgeon attending a private patient comes up with the same diagnosis as the one attending a general patient and whether private patients who have a contract with the physician receive similar services to other persons with the same or similar diagnoses?

DR. DAVIES:

Well, if I understand your question, I can say we have not made such a study. However, if we did, I think we would find that the private patients might possibly be in for a shorter duration of stay but, on the other hand, the cost of the hospital might well be expensive too.

REPRESENTATIVE:

In other words, these beds are not used strictly for private patients but they are also used for very difficult cases?

DR. DAVIES:

They are not used for very difficult cases. They are only thrown into use in an emergency. That is to say, if the hospital is full and they have no bed to house a patient, then they use the private accommodation. The difficulty of the case does not determine whether the patient goes into a private bed or into a general ward.

REPRESENTATIVE:

Some of us heard Dr. Bailey speak this summer at the California Department of Public Health. He described the occupancy studies that you mentioned and pointed out that occupancy was

a function of duration of stay and turnover time, and he used a figure of 2 days as the average turnover period between occupancies. This seemed to all of us to hurt him very much. These were in connection with hospitals where the waiting lists were about equal to the number of beds. Well, upon return from California, I made comparable studies at Johns Hopkins University and found about 2 hours to be the turnover time. Could you say anything about this question of 2 days, as to why this occurs?

DR. BROTHERSTON:

Well, we have one hospital with a shortage of nurses which is working on a 5-day week basis. This hospital, in fact, is operating very efficiently. We also find that hospitals are tending not to have patients in over the weekend if they can avoid it. We have to rely, to a considerable extent, upon part-time married nurses and they like their weekends with their husbands. Therefore, we have a difficulty here. Therefore, if one admits the patient on Monday and leaves Sunday empty, then, in fact, it isn't an inefficient use of hospital beds. After all, you have to feed the patient. However, I must admit that here and there an inefficient management does result in the turnover intervals. From time to time, when we especially are visiting a hospital, say twice a week, we aim to try to get people working on a more solid contract than these two half-days a week. In some of these cases, if the surgeon insists on seeing the patient himself, then there is a kind of wastage as to time. However, not all occupancy or long-turnover in intervals is inefficient.

THE CHAIRMAN:

You mentioned the 10 percent sample in the collection of data. Did you cover the detail? What sort of statistics were being collected from that sample in your paper?

DR. BROTHERSTON:

Yes, I have said something about this. From the start, this hospital inpatient questionnaire or inquiry was envisioned as having two functions. One was a division of morbidity data and the other was to assess hospital administration. Therefore, the data give you diagnosis, size of hospital, region, duration of stay, etc. The responses supply quite a sizeable amount of extremely interesting data about the workings of the hospital and, as the survey goes on, more tabulations will be produced of this kind.

DR. PAYNE:

You had mentioned that general practitioners usually provided their continuity of care under the system. I wonder if it is possible—or whether it is done—for specialists also to provide continuity of care in such diseases as diabetes or heart disease?

DR. BROTHERSTON:

Yes, this is in fact very much so. There is a tendency, with certain kinds of medical conditions, primarily for hospital specialist groups, to build up outpatient services with which patients may be associated over a long period of time—in such conditions as diabetes, stabilization of anticoagulants, and coronary disease, for example. There is no doubt that this has provided a very valuable service. We have evidence which shows the value of this in diabetes. However, equally, at the margins, there is an area of conflict here between the hospital and the general practitioner, as the hospital may tend to hold onto the outpatient longer than the general practitioner thinks it necessary. There is also a problem that, so long as the hospital takes over responsibilities of this kind as it were, the general practitioner's capacity for coping with this particular problem is eroded. However, this is a sort of responsibility which is amenable to quantitative study. I think it is a question of the technology involved and the skills involved in providing the supervision and care. Also on a population basis, it is unlikely that any one general practitioner would have the number of such patients required for him to build up the skills to give the care which these conditions need.

DR. PAYNE:

One other question. It was said that length of stay was a function of available beds and, of course, this has been debated for a long time. Superficially, the difference between your country and ours as to length of stay is very much a matter of custom. It is customary in Michigan for obstetrical patients to stay 4 days. In England it is customary for these patients to stay 10 days. In Canada, right across the river from Detroit, the length of stay in acute myocardial infarction is 6

weeks—in Michigan it is 3 weeks. This is customary.

DR. DAVIES:

I say there are different customs when you live in different parts of our country also. I would also someday like to conduct a study in order to find out which group of patients really does best in the long run.

DR. BROTHERSTON:

Perhaps certain types of customs, like certain kinds of traditions, are involved. I think your duration of stay for maternity cases was pretty sharply changed during wartime so that, after all, there are factors in this situation other than just local tribal custom.

THE CHAIRMAN:

I think it is also true that on the West Coast, where stay seems somewhat lower, there has also been a great population growth and shortage of beds. Therefore, there is a certain relationship. I suppose we all get to wondering what would happen if one had endless beds.

MR. DENSEN:

I would like to go back to the comment that Dr. Brotherston made a moment ago in relation to Dr. Payne's question. You mentioned the value of the hospital specialist, in certain programs, taking care of patients on a longer outpatient basis, and said that the value of this has been shown in diabetes. Would you elaborate what the items were that showed the value of this arrangement in regard to diabetes? The reason I ask this question is that it is of interest in the measurement of the problem of quality of care discussed earlier this morning.

DR. BROTHERSTON:

Well, my memory is hazy on this, but this is in terms of such things as different types of patients, frequency of comas and hyperanemias, or more serologic complications, in groups controlled at clinics as compared with groups in the hospital.

DR. BARSAMIAN:

I was just admiring this book of Dr. Brotherston's with regard to the problem of length of stay and number of admissions. The appendix shows the differences in length of stay of surgical patients. You have explained this as 60 percent medical and 40 percent surgical. Doing a bit of arithmetic, you find the length of stay with those factors, times the number of admissions per thousand population, divided by the number of beds per thousand population between us and England comes out to exactly identical figures, which really shows that progress is supplied in terms of demand.

REPRESENTATIVE:

I notice a lot of footnotes and references in the paper, and I wonder if these will be supplied. I would like to have these references.

DR. BROTHERSTON:

I think you can take it that the reference numbers are written in because of our hope that something will happen.

REPRESENTATIVE:

Would you say something about the size of hospitals, if you can, and whether all hospitals have the common specialty services such as maternity and pediatrics?

DR. DAVIES:

As I said, we expect all of our hospitals to be general hospitals and to have obstetric and pediatric departments; likewise a geriatric department and a psychiatric department. Some of them will have full-scale accident departments. One of the things that came out of what was said this morning had to do with casualty departments. The Nuffield Trust sponsored a study of casualty departments, accident or emergency rooms, and, as a result, we have had two quite good reports produced, one by the Department and one by the British Medical Association. We intend to abandon a large number of the accident departments that we have and we likewise intend to provide 24-hour coverage in others. Also, we intend to provide a higher quality of medical supervision than we have ever had before.

Casualty departments, although they are a hospital shopwindow, are not the responsibility of any consultant surgeon. The intention is to give one consultant an administrative responsibility in this field. The implication of all this is that the

hospitals will be big hospitals and it seems to me that they can be anything from 500 beds to whatever the top limit in a given case is likely to be.

One of the things we do not intend to do is build smaller hospitals. Our feeling is that the general hospital should not have less than 300 beds. It has to be able to carry the necessary consultant services of one general hospital. If these services are provided for every small little hospital, there would not be enough skilled personnel. Therefore, the fact is that our hospital level, the lowest level, is likely to be in the nature of 300 and the upper limit has not been determined.

DR. BROTHERSTON:

I would just like to add one comment to this accident business.

Oddly enough, one of the few studies that has been made in my country in the general field of medical care study goes back into time and was in the field of trauma. Before the war there was a fracture committee. I think it was the profession itself that did this. The British Medical Association, if I remember rightly, set up a study on the outcome of fracture treatment in terms of time taken for bone union, time taken for restoration of function, time taken before the man went back to work, and this kind of thing. It compared results among the specialists, the orthopedic clinics, the general surgical clinics, and surgery by the general practitioner. Differences were found in favor of the specialist and, further, the orthopedic units were better than the general surgical units, and the general surgical units were better than the general practitioner care. This report has a very great influence in the thinking in my country about how fractures should be treated, and I think it also has influence in terms of the view of responsibilities by the lower courts. If a patient brings action for damages against a physician, this kind of evidence might be used to show that the particular physician should not have attempted to look after that case. This is an additional kind of discipline which was brought about.

MR. J. C. WOOSLEY:

I would like to point out that this matter of optimum hospital size must be very much a function of demographic factors too. The distribution of population in Great Britain is outside of the large metropolitan areas and is probably a great deal more uniform and dense than it is in this country. It would certainly point to the possibility that in other situations, such as in parts of this country where population is spread much more evenly, you simply have to get along with smaller hospitals. Isn't this true?

DR. DAVIES:

We accept the fact that from time to time we have to build smaller hospitals, but they cannot support the kind of medicine that we feel hospital treatment implies. We must make some provision for really isolated communities. As I say, we will have to make some special arrangements. However, the principle from which we move is clearly laid down.

REPRESENTATIVE:

One of the things that bothers me a little bit is that the admission of the patient to the hospital is obviously under the control of the physician and, in this country, with the hospital care becoming more centered on hospitals, we admit that we also have the increasing trend toward specialization. I understand that in the United Kingdom admission of patients to the hospital is on the recommendation of the general practitioner through a consultant on the staff of the hospital. I wonder if you would have any concern about hospital utilization if more and more general practitioners had hospital privileges so that you would get circumstances more parallel to what exists in this country?

DR. DAVIES:

I think it is likely that more and more of the general practitioners will work in hospitals. Whether in fact they will be taking in patients or just working in hospitals is one of the things that remains to be seen. At the moment, the general practitioner is the man who triggers the whole thing off. He determines that he cannot any longer look after his patient at home for studies he wants to make and, therefore, hospitalization is required. He is the man, in fact, who gets in touch with the consultant and arranges the admission.

REPRESENTATIVE:

Does he not have to persuade the consultant that the patient should come to the hospital or does he fling the patient on the consultant?

DR. DAVIES:

In the case of a geriatric patient, he inflicts the patient. In the case of the others, he has on the whole very little difficulty persuading the consultant.

THE CHAIRMAN:

We do appreciate Dr. Brotherston and Dr. Davies being willing to prepare this material for us. It has been most worthwhile and very helpful. It is also very pleasant to visit with them.

REFERENCES

These references relate to Professor Brotherston's paper on "Research on Hospital Use in the United Kingdom" presented at the Chicago Conference on January 23, 1963.

1. Anderson, O. "Levels of Research in Hospital Administration." *Annual Meeting of the Association of University Programs on Hospital Administration.* University of Iowa. 1962.

2. Department of Health for Scotland. *Hospital Plan for Scotland.* H.M.S.O. 1962.

3. Norris, V. *British Medical Journal*, 1: 129. 1952.

4. Jewkes, J. & S. *The Genesis of the British National Health Service.* Oxford. 1961.

5. "Efficiency Methods in the Hospital." *Proceedings of the Eleventh International Hospital Congress at Edinburgh.* 1959.

6. Ministry of Health and General Register Office. *Report on Hospital In-Patient Enquiry 1956/7.* H.M.S.O. 1961.

7. Cowan, K. *Scottish Medical Journal*, 6: 22. 1961.

8. Nuffield Provincial Hospitals Trust. *Studies in the Functions and Design of Hospitals.* London. 1955.

9. Nuffield Provincial Hospitals Trust. *Hospital and Community. I. Hospital-treated Sickness Amongst the People of Stirlingshire.* London. 1948.

Nuffield Provincial Hospitals Trust. *Hospital and Community. II. Hospital-treated Sickness Amongst the People of Ayrshire.* London. 1950.

10. Bailey, N. T. J. *Medical Surveys and Clinical Trials.* (ed.) Witts. London. 1959.

11. Nuffield Provincial Hospitals Trust. *Towards a Measure of Medical Care. Operational Research in the Health Services.* London. 1962.

12. Barr, A. *British Journal of Preventive and Social Medicine*, 12: 61. 1958.

13. Forsyth, G. and Logan, R. F. L. *The Demand for Medical Care. A Study of the Case-load in the Borrow and Furness Group of Hospitals.* Nuffield Provincial Hospitals Trust. London. 1960.

14. Airth, A. D. and Newell, D. J. *The Demand for Hospital Beds.* Newcastle upon Tyne. 1962.

15. Abel-Smith, B. *Hospitals*, 36: 30. 1962.

16. Abel-Smith, B. and Titmuss, R. M. *The Cost of the National Health Service in England and Wales.* Cambridge. 1956.

17. Grundy, F., Hitchens, R. A. N., Lewis-Faning, E. "A Study of the Hospital Waiting Lists in Cardiff 1953–1954." *Report Prepared for the Board of Governors of the United Cardiff Hospitals.* 1956.

18. Crombie, D. L. and Cross, K. W. *Medical Press*, 242: 316. 1959.

19. Mackintosh, J. M.; McKeown, T.; and Garratt, F. N. *Lancet*, 1: 815. 1961.

20. Tooth, G. C. and Brooke, E. M. *Lancet*, 1: 710. 1961.

21. Brooke, E. M. *Lancet*, 2: 1211. 1962.

22. Ministry of Health. *A Hospital Plan for England and Wales.* H.M.S.O. 1962.

23. Lowe, C. R. and McKeown, T. *British Journal of Social Medicine*, 3: 110. 1949.

24. Lowe, C. R. and Geddes, J. E. *Lancet*, 1: 92. 1952.

25. Garratt, F. N., Lowe, C. R. and McKeown, T. *British Journal of Preventive and Social Medicine*, 11: 165. 1957.

Garratt, F. N., Lowe, C. R. and McKeown, T. *British Journal of Preventive and Social Medicine*, 12: 23. 1958.

Garratt, F. N., Lowe, C. R. and McKeown, T. *Lancet*, 1: 682. 1958.

26. McKeown, T., Mackintosh, J. M. and Lowe, C. R. *Lancet*, 1: 818. 1961.

27. Kidd, C. B. *British Medical Journal*, 2: 1491. 1962.

28. Benjamin, B. and Perkins, T. A. *The Hospital*, 57: 31. 1961.

29. Godber, G. E. *British Medical Journal Supplement*, 1: 115. 1959.

30. Oxford Regional Hospital Board. *Studies on the Hospital In-Patient Enquiry.* Report N. 1. 10,000 Admissions in the Oxford Area. 1960.

31. Lee, J. A. H.; Morrison, S. L.; and Morris, J. N. *Lancet*, 2: 785. 1957.

Lee, J. A. H.; Morrison, S. L.; and Morris, J. N. *Lancet*, 2: 170. (Letter) 1960.

32. Gibson, J. R.; Hughes, T. L.; and Broughton, A. V. L. *Medical Officer*, 99: 117. 1958.

33. Jeffery, I. J. and Barr, A. "A Method of Evaluating the Use Made of Hospital Beds." (Draft Paper).

34. Goodall, J. W. D. *Lancet*, 1: 1063. 1951.
Bailey, N. T. J. *Journal Hygiene (Cambridge)*, 49: 452. 1951.

35. Newell, D. J. *British Journal of Preventive and Social Medicine*, 8: 77. 1954.

36. Mason, L. G. S. "The Role of the Ministry of Health in Organization and Methods and Work Study." (Summary of talk.) 1963.

37. Bailey, N. T. J. *Journal of the Royal Statistical Society, Series B*, 14: 185. 1952.

Welch, J. D. and Bailey, N. T. J. *Lancet*, 1: 1105. 1952.

Bailey, N. T. J. *Applied Statistics*, 5: 146. 1956.

38. Nuffield Provincial Hospitals Trust. *Towards a Clearer View. The Organization of Diagnostic X-ray Departments.* London. 1962.

39. *Report of Joint Working Party on Medical Staffing Structure in the Hospital Service.* (Platt Report). H.M.S.O. 1961.

40. Revans, R. W. *Physics in Medicine and Biology.* 7: 147. 1962.

41. Revans, R. W. *Journal of Chronic Diseases*, 15: 857. 1962.

Revans, R. W. *Sociological Review Monograph No. 5.* University of Keele. 1962.

Revans, R. W. Personal Communication. 1963.

42. Revans, R. W. Personal Communication. 1963.

43. Acton Society Trust. Hospitals and the State. *Hospital Organization and Administration under The National Health Service.* London. Research Paper No. 1. *Background and Blueprint.* 1955.

No. 2. *The Impact of Change.* 1956.

No. 3 *Groups, Regions and Committees. Part I. Hospital Management Committees.* 1957.

No. 4. *Groups, Regions and Committees. Part II. Regional Hospital Boards.* 1957.

No. 5. *The Central Control of the Service.* 1958.

No. 6. *Creative Leadership in a State Service—A General Survey.* 1959.

44. Jones, Maxwell. *Social Psychiatry: A Study of Therapeutic Communities.* London. 1952.

45. Collings, J. S. *Lancet*, 1: 555. 1950.

Hadfield, S. J. *British Medical Journal*, 2: 683. 1953.

Taylor, S. *Good General Practice.* London. 1954.

46. Oxford Regional Hospital Board: Operational Research Unit. No. 3. *Hospital Outpatient Services.* 1962.

47. Priest, W. M. *Lancet*, 2: 1043. 1962.

48. Acheson, R. M.; Barker, D. J. P.; and Butterfield, W. J. H. *British Medical Journal*, 2: 1315. 1962.

49. Fry, J. *British Medical Journal*, 2: 1322. 1959.

50. Logan, R. and Forsyth, G. Personal Communication.

51. Backett, E. M. "The Use of Hospital Outpatient Services by General Practitioners in N.E. Scotland." Progress Report on On-going Research.

52. Mestitz, P. *British Medical Journal*, 2: 1108. 1957.

53. Fry, L. *Lancet*, 1: 163. 1960.

54. Parry, C. P. B.; Cooper, B. D.; Shelswell, M.; Dunkerley, G. E.; Denham, R. A.; and Murray, C. M. M. *British Medical Journal*, 2: 909. 1962.

55. Blackwell, B. *Lancet*, 1: 369. 1962.

56. Nuffield Provincial Hospitals Trust. *Casualty Services and Their Setting. A Study of Medical Care.* London. 1960.

57. Department of Health for Scotland. *Hospital Planning Notes Provision and Design of Casualty and Accident Departments.* H.M.S.O. 1961.

58. Stephens, F. O. and Dudley, H. A. F. *Lancet*, 1: 1042. 1961.

59. Brown, M. and Carling, F. C. *British Medical Journal*, 1: 478. 1945.

60. Beck, I. F., Gardner, F. V. and Witts, L. V. *British Journal of Social Medicine*, 1: 197. 1947.

61. Pemberton, J. and Smith, J. C. *British Medical Journal*, 2: 306. 1949.

62. Ferguson, T. and MacPhail, A. N. *Hospital and Community.* Nuffield Provincial Hospitals Trust. London. 1954.

63. McKenzie, M.; Deans, W. R.; Richardson, I. M.; Mair, A.; Harnett, R. W. F.; Curran, A. P.; and Ferguson, T. *Further Studies in Hospital and Community.* Nuffield Provincial Hospitals Trust. London. 1962.

64. Acheson, E. D. Personal Communication.

65. McGhee, A. *The Patient's Attitude to Nursing Care.* Edinburgh. 1961.

66. Haywood, S.C.; Jefford, R. E.; MacGregor, R. B. K.; Stevenson, K.; and Wooding Jones, G. D. E. *The Hospital*, 57: 644. 1961.

67. Institute of Community Studies. Personal Communication.

68. P. E. P. (Political and Economic Planning). *Family Needs and the Social Services.* London. 1961.

WEDNESDAY AFTERNOON SESSION

January 23, 1963

The meeting was reconvened at 1:40 p.m., Mr. Bugbee presiding.

CHAIRMAN BUGBEE:

I don't need to introduce most of the panel. I mentioned to you that Dr. Nelson had been called home and that Dr. Trussell had to leave yesterday. Added to the panel and not shown on your list is Dr. Willard Wright, who is on the Council of the American Medical Association. He is a practicing surgeon and he is a very good member of the committee which developed the report on "Area-wide Planning for Hospitals and Related Health Facilities" by the Joint Committee of the American Hospital Association and the Public Health Service.

You have already met Dr. Brotherston, Mr. Densen. Walter McNerney, and Dr. White.

George St. J. Perrott you all know. He was, for many years, a member of the staff of the U.S. Public Health Service and very much involved in the collection of data and research in medical care throughout a long career. He is presently acting director of the Division of Research and Statistics of the Group Health Association and is involved in some studies for that organization.

The subject of the panel is not an easy one, and I believe that they would be delighted to have you join in with comments and also to be ready to ask questions. They are going to direct their initial comments toward approaches to further research on hospital use and its related aspects.

We thought that Dr. Brotherston had earned a slight respite and so we are going to call on him a bit later. I would like to suggest that we start with Paul Densen.

Guidelines for Future Research

Mr. PAUL DENSEN:

It seems to me that the discussions in the last two days and one of the things that is fairly evident is that the factors affecting hospital utilization are largely forces that operate in the community outside the hospital.

If you wish, therefore, to influence the utilization of the hospital, you must take account of the relationship of the hospital to the community.

We have, in New York City, been giving considerable thought to this from many different standpoints, and particularly from the standpoint of some of the issues relating to the quality of medical care. Everyone is concerned with trying to provide some form of high quality medical care which encompasses such things as continuity, comprehensiveness, and family-centered care, but nobody is quite sure how you do this kind of thing or what kind of situation lends itself best to producing this kind of care.

Experimental Situations

In the Health Department in New York City, we felt that, since we were in this relatively ignorant position, one approach would be to try to set up experimental situations, in which we set up different kinds of approaches to providing the

medical care and then looked at what happened to patients and to their utilization of medical care facilities in these different situations. I would like to take a moment to describe briefly some examples of what I am talking about. I do this because I think that this offers one kind of approach to the problem of looking at the community factors influencing the utilization of the hospital.

One of the situations which it has been possible for us to set up in New York has to do with the welfare population. Our welfare population in New York City gets its medical care in the usual way, through a panel physician type of arrangement. The program is such that the patient must call a physician to the patient's home and so obviously the home-call rate in this kind of situation is extremely high. It seemed desirable to try another approach, and the approach used was developed with New York Hospital.

At New York Hospital, 1,000 welfare families are provided with complete medical care in the hospital, in the home, in the outpatient department and, if necessary, in the nursing home. There is a control group of another 1,000 welfare families drawn exactly the same way from the files of the welfare department. In fact, the 2,000 families are randomized as to who goes into the welfare project at New York Hospital and who gets medical care in the same way they usually do.

I won't go into the details and methodology, but these two groups are being compared in terms of such things as their utilization of medical facilities, their visits to outpatient services, their rate of hospitalization, and the costs involved.

One of the interesting side products of this particular piece of research is the fact that the hospital now knows more than it ever knew before about what it costs to take a patient into the hospital and what it costs to take a patient into the outpatient department, because in order to make the comparison, they had to know what was going to be included in the cost factors. I think it was very surprising to some of the hospital administrators to discover that they did not know as much as they thought they did about the costs of patient care in the hospital.

The third area in which the two groups are going to be compared has to do with the thing that was talked about to some degree this morning, the quality of medical care. There we are wrestling, just as you all were this morning, with what is meant by quality medical care, and to some de gree they are turning in the direction that we suggested this morning and yesterday afternoon of looking at the "so-what" type of study.

This is not the only approach that they ar taking. It is also combined with the approac that Dr. Peterson mentioned yesterday, as well a some of the others, which is a medical-audit typ of approach.

The New York Hospital experiment is on approach to looking at utilization. And when you set the situation up experimentally, you have some degree of control over it.

If I may go back for just a moment, I would like to reiterate that the forces influencing hospita utilization are largely outside of the hospital. You might wonder, perhaps, how it happens that the hospital is even interested in listening to the health department in the development of demonstrations. Well, this comes about partly because of population changes in terms of numbers and partly because of the economics of the situation. One of the reasons they are interested in listening to different kinds of arrangements is that they are losing teaching material because of changes in the proportion of the population covered by health and hospital insurance and changes in population composition around the hospitals. The proposed demonstrations provide a mechanism by which they can get teaching material in a way that hasn't been available to them before.

HOSPITAL-HEALTH CENTER COOPERATION.—Another situation which we have organized in New York City grows out of the fact that one of the hospitals in New York City happens to be a few blocks away from the district health center. In the St. Luke's Hospital program, the district health center and the hospita work very closely together. This is not a new idea—it has been tried in other places, but here we are attempting to develop it on a large scale.

One of the things that has already happened is that the well-baby clinics that were run for two afternoons a week in the hospital have been placed in the district health center. The health department pays the hospital's staff physicians as well as its own physicians for the care they render. The quality of the care is supervis jointly by the pediatrics department in this teaching hospital and by the health department.

I can remember a few fragmentary figur from the early part of this. The program has

gone very far at this point. The well-baby clinic referred 44 babies to the hospital for more definitive care than could be rendered at clinic because they were ill. Every one of those 44 showed up at the hospital and they all had a note that went back to the district health center about what was found in the hospital. This is quite different from what happens in most of our baby clinics. It gives you an example of ways in which we might play around with developing continuity of care.

Of course, it still begs the question as to what about the impact of this on the health of the baby. This question poses some very difficult measurement problems, but I think that we have to put our minds to it and find a way to solve them.

HEALTH CARE FOR THE AGED.—Now, very quickly, I would like to go to the other end of the age scale and talk about our Queensbridge project. This is just another experimental situation. In this particular program we are working in a housing situation which involves a high proportion of aged individuals. Further, in New York City terms, it is fairly far removed from the hospital. By this I mean that it takes about three-quarters of an hour and several buses for these elderly people to get from the housing project to the municipal hospital, which is the only one available to most of them. Further, their income status is exceedingly low.

The district health officer and the housing people were very much concerned about the health of this group of elderly people. It was decided to set up a kind of an outpatient clinic right in the housing project. We have done this. It is a combined program of the health department, housing department, hospital department, the welfare department, and I think there are a few other departments also involved. I do not say this facetiously, because I think it is important to recognize the fact that when we start to work on these problems we pretty soon have to find a way of approaching the problem as a problem and not worrying about who has departmental jurisdiction. We have to find ways of crossing departmental lines. There are organizational patterns in New York City, such as the Interdepartmental Health Council, which are designed to do just this. That, of course, is at the top level.

However, at the level where you see the patients, this operates even more forcibly. I would like to give you just one example with regard to the Queensbridge Housing Project to indicate just how this works.

It had been unheard of in New York City to allow the patient's record to leave the hospital before this particular project was put into operation. However, it became important, for many reasons, to have the hospital records of these elderly patients available at the Queensbridge health center when these patients came in for care. It turned out that one of the health department nurses lived near the hospital and went by there every morning on her way to work and could obtain and return the hospital records. When Mrs. Jones was at the program and needed care, somehow or other all the rules made up in the central office regarding what could or could not be done managed to be ignored, especially when you faced the problem of doing something specifically for her. In this case, the rule of not letting a record out of the hospital was broken.

There was no problem—nobody suffered and, as a result, the patients have gained considerably.

One of the evaluation elements of this study that we want to look at very closely is the impact of the program on hospital utilization by this elderly group as compared with similar elderly groups in another housing project about the same distance physically removed from the hospital.

Another aspect of this which I want to mention has to do with the quality of care. We would like to come to grips, if we could, with the measurement problems in this area. To illustrate I will cite a particular case.

This case concerns a man who had diabetes, a heart condition, and three or four other things wrong with him. When he came to the Queensbridge housing project, they asked him what his problem was. He said, "My problem is my wife." His wife was about the same age as he was. Many of these people are in their seventies, and she could not get around as much as she would have liked. As a result, he had to take care of her, and he was worried about this. This was his major problem. Now, if this man had gone to the municipal hospital there is practically no question but that he would have been shunted from one outpatient clinic to another in this particular hospital. Also, he very likely would have been hospitalized, and his wife would then have become even more of a problem.

Here, we come right back to the question that was raised this morning—what is the function of the hospital in this kind of a situation?

NEW PATTERNS OF CARE.—What we are attempting in terms of direction of future research in New York City is to find ways of setting up different patterns of medical care that can be evaluated. This is not easy—it is experimental—it is expensive—but we think that it is a worthwhile approach because at the same time we are providing a form of medical care to some groups of people who have not received this kind of care before, and we are learning ways to get at this kind of thing.

There is one final comment that I would like to make. In the last three weeks I have had two very interesting meetings in my office. Two people from different hospitals came to see me to talk about ways of changing the hospital to a community hospital. These are their words, not mine, and this development is partly a result of Dr. Trussell's program of affiliating municipal hospitals with the teaching hospitals in the community. He is attempting to develop the program in such a way that there will be full-time chiefs of staff for the services of the hospital.

Now, one of the physicians who came in to talk with me said that he was very interested in what happened when he went out to recruit people for these chief-of-staff jobs. He said to these men, "Wouldn't you like to come here and become chief of medicine or chief of surgery?" There was a polite silence, but no particular spark of enthusiasm was aroused. He then said, "Wouldn't you like to be chief of medicine in Brooklyn Hospital and help us turn this into a community hospital, to work with Cumberland Hospital, to work with the health department, to work with the housing department, to see what we could do with the nursing homes so that we could come up with a balanced hospital community?" Well, when they were spoken to this way there was a considerable interest. It is very interesting to see that this type of thing is capturing the imagination of people who might be recruits for these kinds of positions.

I would sum up these remarks by saying that I think that one of the directions research can take in the field of hospital utilization is to examine the hospital in relation to its total role in the community, and to attempt to do this through various kinds of experimental situations.

THE CHAIRMAN:

Thank you very much, Paul.

Avenues of Research

MR. WALTER McNERNEY:

I should like to comment very briefly, on a few avenues of research that seem to be indicated, on some methods and techniques, and then add a few general comments on such matters as research manpower and implementation of findings.

As far as avenues of research are concerned, I hope that somebody will interest himself in looking more definitively at the extent to which benefits meet, on a percentage basis, total or aggregate medical expenses of individuals.

If this were done, for example, on a population-survey basis, we would have much greater sensitivity in measuring the extent to which insurance influences use. We could look at the degree to which basic versus major-medical type coverage meets episodic costs, rather than simply describe people as insured or not insured.

I should like to stress the desirability of expanding the studies of effectiveness (ideas which I am sure that Tom Fitzpatrick, Don Riedel, and Bev Payne share) to a population basis, to get at those who are *not* hospitalized as well as those who are hospitalized and to get at the many democratic, social, and economic variables that could be related to effective and ineffective use.

The criteria involved in the effectiveness studies need to be extended to new diagnoses. Better criteria for the evaluation of procedures are needed. Self-survey kits should be developed for use by hospitals. Such questions as why doctors vary from the criteria should be asked. For example, what are the age, medical school, hospital appointment, and similar characteristics of those who do vary to a greater or lesser degree.

In all probability, for some purposes, screening procedures will have to be developed to focus on sub-groups of users in particular diagnostic categories in order to achieve sufficient statistical reliability.

The interaction of experience and community rating needs to be studied over a larger number of years and with a larger number of

groups than has been done to date. They need to be interviewed and asked why they changed from one form to another and more details associated with the change, such as age, sex, economic status, and family size, need to be gathered. What *are* the dynamics of the interaction? Does the voluntary system have an insoluble problem?

I would hope that there would be a greater research interest developed in the effect of home care, nursing home care, and ambulatory care on episodic costs. There is a great deal of speculation on this.

We need to follow selected patients over periods of time under various forms of practice to come to grips, more definitively than we have to date, with the issue of productivity. What is the comparative productivity of group practice versus solo practice? It would be possible to match the characteristics of physicians and patients under two dissimilar types of organization for study purposes.

We talk a great deal about admission rates and about length of stay, but a larger factor influencing costs is per diem cost in the hospital. The whole issue of the efficiency of the hospital itself should be given closer attention.

If I could express a general prejudice regarding these and many other needed projects that could be named, it is that more research needs to be done on a population basis and on an episodic basis, utilizing many of the new sampling and analytical tools that have been developed in recent years. We are attacking too many problems on a highly segmented basis and finding ourselves unable to talk of meaningful results or implications. We now have both the insights and techniques to take bolder steps.

A great deal of work can be wasted unless qualitative references or measures of effectiveness are developed. For example, differential admission rates between high and low income groups becomes sterile without some knowledge of a proper, acceptable, or feasible rate.

When we talk about these types of research we are talking about major sums of money. We must then, get used to the idea that $500,000 is not an improper amount to spend, especially in terms of the importance of the many policy decisions that are involved. If the allegation is true that too much money is available for research, let one point of economy be fewer and deeper efforts.

Techniques and Methods

Turning to methods and techniques, the need for better basic records is pervasive—in terms of their filing, uniformity, and contents, both in and out of the hospital. Hospital and office records are often sketchy and not always filed systematically. Prepayment records often lack basic information such as age and sex of dependents. We need more work on sampling, more work on analytic tools, more work on interviewing techniques, more work on instrumentation. We need to perfect ways of validating source data.

I should like to suggest that many government and nongovernment grants include an "x" amount for work on method and technique. Too often our enthusiasm outruns our tools. Certain grants should be made, of course, to strengthen our tools alone.

General Comments

MANPOWER CONSIDERATIONS.—As far as general comments are concerned, I should like to talk for just a moment about manpower considerations. I think we have to develop a lot less self-consciousness about backgrounds and to promote a much more liberal mixing of skills, with the leadership of those skills, in today's complex research environment, going to the man who can get things done, whoever he may be.

We need a variety of skills in many projects because often when an economic phenomenon is being looked at, the essential problem turns out to be psychological or vice versa and this point is too often lost. In many cases, particularly when utilization and allied problems are being investigated, the nature of the inquiry demands many skills working in harness. Because of the lack of trained people with degrees, bright relatively untrained people should be sought out and given opportunities. Many can provide very effective new ideas and sometimes even leadership in the course of a project. There is a large untapped repository of talent among those with large capacities and little schooling.

Persons with operating experience should be included in many social or economic research projects to help pose sound questions, to help de-

velop effective contacts with the field (obtain data, cooperation on interviews, etc.) and to help with interpretations of data. Without the stimulus of such persons some research workers have inadvertently spent too much time on irrelevancies or pursued favorite themes beyond their worth.

IMPLEMENTATION.—Beyond research per se lies the area of implementation. Too often a project is done which develops a technique, a tool, or an idea that ends up in a publication which gathers dust. I should like to make two suggestions. One is that universities and other research institutions give sabbaticals to selected men who have completed research projects so that they can help implement the findings when there is a good socio-economic justification involved. Administrators in the operational field should also make sabbaticals available to assistants to assist in research and its implementation. The second suggestion is that granting organizations make provision in their grants for implementation of findings pending successful work which can be evaluated while underway. I am talking of a second "x" factor. Many highly useful findings now lie idle.

In closing I should like to express the hope that we can withstand the temptation to fall into rigid ideological camps. We are in a value-laden field and the temptation to move in preconceived directions according to personal prejudices is great. The operating field and patients need objective, well-disciplined help and they deserve nothing less.

Group Prepayment Plans

MR. GEORGE ST. J. PERROTT:

I agree with Dr. McNerney that data on hospital utilization are most valuable when they can be related to a population base of persons both sick and well. Information related to the hospital universe only—that is, the sick person—is useful but has its limitations. However, a population base is usually impossible to obtain for an individual hospital.

I have been interested for some time in the operation of the group practice prepayment programs which have a built-in population base. In the fall of 1960, I had the privilege of being co-chairman of a conference at the School of Public Health in Pittsburgh on the subject, "Health Studies of Human Populations." Here we attempted to identify certain principles and guidelines applicable to the planning and execution of studies involving human populations.

Conferees were supplied in advance with case histories of some 12 outstanding currently active population study centers. Most of these involved geographically circumscribed communities such as Hagerstown, Maryland, or Alameda County, California. These have recently come to be known as "human population laboratories." Two of the 12 involved studies where a group practice prepayment plan was being used as the research laboratory. One study, by Sam Shapiro, is being carried on among members of the Health Insurance Plan of Greater New York. Here the availability of comprehensive care and continuous health records on the enrolled population have made possible a study of a health problem of older people—coronary heart diseases. At the other end of life, medical information on women as to the outcome of pregnancy and on congenital malformations is being obtained by Shapiro at HIP and by Yerushalmy at the Kaiser Health Plan in California.

UNIFORM DATA PROGRAM—Realizing that the potentialities of prepaid group practice settings for contribution to medical knowledge will be enhanced and better utilized as the result of a uniform basic data program, the Group Health Association of America recently applied for and received a grant from the Public Health Service for a "Nationwide Collection and Utilization of Basic Statistics on Comprehensive Medical Care Provided Through Prepaid Group Practice."

In connection with this project, the Assistant Director and I have just made a series of visits to some 18 plans in various parts of the country to collect descriptive data on their operation, e.g., (1) location and general type of community served, methods of operation, staff, facilities, and scope of services, (2) population enrolled by age, sex, and such other characteristics as were obtainable, and (3) amounts of professional and other personal services and utilization of hospital and other facilities.

The plans visited varied in size from 2,400 to 564,900, embracing a total of 1,575,000 enrollees. Some own their own hospitals, some self-insure

or hospitalize through Blue Cross, and some provide only out-of-hospital services. As might be expected, records kept and statistics derived from them vary greatly among the plans.

One of our early findings was that the population base, though "built-in," was not always available for statistical tabulations and particularly not when the population was to be classified by age and sex. The raw data were on paper somewhere but not always easily accessible. This was sometimes the case in health plans financed through union welfare funds where the population data were kept by the welfare fund.

In obtaining statistics, standard definitions must be used for such items as covered persons, person-years of exposure, and different persons covered in specific time periods. In counting medical services rendered, there must be standard definitions of physicians' services, ancillary services, preventive services, etc. Counting laboratory services presents another problem of definitions, e.g., a complete urinanalysis may be counted as 1, 2, or 5 services depending on the counter. In this connection, it should be mentioned that there are certain ratios not referred to the total enrollment that are significant in terms of plan operation. Some of these indices, e.g., physical examination, appendectomy and tonsillectomy, laboratory and X-ray services expressed as ratios to total physician visits and infant and maternal mortality rates per 1,000 live births, may be related to quality of medical care.

As far as data with a population base are concerned, we are thinking of starting out rather modestly. We have given up, for the present, the idea of getting diagnostic data but rather starting with something of this sort: physicians' services per enrollee-year—office, home, and hospital; physicians' services classified by medical specialty—per enrollee-year and per patient (this gives some indication of diagnosis); percent of individuals receiving one or more services—a figure which varies from a low of 30 percent in some of the smaller plans to 75 percent in some of the plans offering comprehensive services; hospital utilization classified as medical, surgical, and obstetrical; laboratory and X-ray services.

VARIABLES IN HOSPITAL USE.—During this meeting we have heard the results of studies comparing hospital utilization by subscribers of group practice prepayment plans with fee-for-service prepayment plans. Several studies have shown lower hospital utilization by group practice prepayment subscribers; others have reported little difference. What impressed us on our recent trip was the tremendous variation in hospital utilization from one plan to another. The lowest was an annual rate of 0.25 days per enrollee and the highest around 1.3 days per eligible enrollee; doctors' calls from 2.4 to 5.0 visits per enrollee with home calls varying from 10 to 700 visits per enrollee per year.

Obviously we must have a better understanding of the relationship among factors such as the characteristics of the population at risk, the insurance mechanism, and the organization of medical services before it is possible to generalize about hospital utilization. Differences in local resources for hospital care and in local practices in hospitalizing patients certainly play an important role. Possibly characteristics of the insured population not usually measured by the statistician are involved.

This was one of a number of special problems that came up frequently during our recent field trips. I have a list of some 20 here whose solution would contribute to the more efficient operation of the plans and might well have broader application. Among these were: factors affecting hospital utilization; prepayment coverage of mental illness, dental care, drugs, pre-existing conditions, care of older persons; staffing patterns; appraisal of quality of care; group versus individual membership utilization; productivity of periodic physical examinations versus multiphasic screening; reasons for variation in utilization among different contract groups.

We are under no illusion that we shall solve all these problems during the period of our grant but we hope to stimulate some work by the plans themselves. We are also planning a consultation service to assist plans in developing statistical data from their record-keeping systems and in making practical use of the information.

The Physician's Role

DR. WILLARD WRIGHT:

I would like to speak briefly as a member of the Council of Medical Service of the American Medical Association. Our function is really to

delve into all the methods under which medical services are provided in this country. This refers to the methods under which doctors work and perform their services and, of course, methods of payment for these services.

I will not go into all of our many interests in this field. It is unfortunate that none of us can be completely knowledgeable in all this wide area, but we do have people who work for and with us and help our understanding.

At this moment we are quite deeply concerned—and we do not call this research because we don't do research; we just study things and try to learn—with the reassessments, which we hope will be realistic, of relationships existing between physicians and hospitals and under what circumstances physicians should work in hospitals.

Our method of procedure is almost completely opinion and attitude survey. We simply interview people who are knowledgeable in the field and who are leaders in their particular area of interest and get their ideas and attempt to put them together. Unfortunately, we have never been able to feed these into a computer and get anything back out.

I would suggest to this group that perhaps there is much to be learned by talking with representative physicians about utilization and quality of medical care, which seem to be interrelated in these studies.

I would suggest to them that the person who is delivering the service is, after all, the one person who knows a lot of answers which you are trying to get in other ways. I would further suggest that no study or appraisal of the quality of medical care in an individual instance be considered complete unless the individual doctor who rendered the care has had an opportunity to explain the circumstances under which such care was given because, after all, we are dealing with people and people are imperfect. The doctor is just as imperfect as the next person, and a doctor takes care of a patient depending a great deal on what the attitude of the doctor is toward the particular situation and what the attitude of the patient is toward the same situation.

You have many areas involved here. You have the highly over-cautious doctor and you have the highly over-apprehensive patient. You have the devil-may-care doctor, who will take everything in stride; you have the patient who pays no attention to what the doctor says—you have all these many, many factors and they must all be taken into consideration.

Furthermore, it seems to me that the attitudes of doctors and the attitudes of patients are very closely related to the so-called economy of abundance under which Americans live. In medical care, certainly during the last 20 or 30 years, there has been a good deal of this abundance—nothing is too good for the patients and anything that we can provide them with is what they need. This is just the American way of doing things—this is American business—and people who were brought up with this attitude are going to carry that over into the medical field. You cannot talk these people into pinching a dollar here and there by staying out of the hospital a couple of hours, a couple of days, or a couple of weeks less if they decide they don't want to do that.

THE CHAIRMAN:

Dr. Wright, thank you for your comments.

I don't think that I did very well in introducing Dr. Kerr White. I mentioned him yesterday. I think he is very well known to this group as a member of the faculty of the Medical School at Chapel Hill, North Carolina, where he was involved in some very interesting medical care research. During the past year he has become professor and chairman of the Department of Epidemiology and Community Medicine at Vermont, as you can see from your program, although I think that he has been a member of one of the study sections concerned with this type of research for quite a few years. He has just, within the past 6 months, become Chairman of the Health Services Research Study Section of the National Institutes of Health concerned with the type of research we are discussing. On many counts, we will be interested in any comments you want to make.

Alternative Health Facilities

DR. KERR L. WHITE:

First of all, I would like to express the thanks of the Study Section for this invitation from Dr. Crosby, Dr. Haldeman, and Mr. Bugbee for our members to attend and participate in these discussions.

Perhaps a word or two about the name of the Study Section might be helpful. It was originally known as the Hospital Facilities Study Section until the U.S. Public Health Service, anticipating the future, several years ago changed the name to Health Services Research Study Section. I think that this broader title perhaps suggests some of the changing emphasis that has characterized the discussions of the last day or two. No longer can we be restricted to the hospital as the only health facility to be considered in discussions focused on utilization.

I suppose that we are making some headway in examining the assumption that physicians are the sole arbiters of what is good for the public's health. There are many other professions and people concerned with the public's health these days, not the least, of course, being the consumers who are footing the bill and are more and more interested in the sorts of services they want and the level of quality they expect. There are, however, other assumptions that could be looked at.

One of these maintains that the hospital ward is the sole or most important place in which to provide exemplary medical care. It is worth recalling that if there are 1,000 adults at risk in a community, in the course of a month about 750 of them will have an injury or illness which they can recall at the end of that month. About 250 will consult a physician and only about 8 or 9 will be admitted to a hospital. It is apparent that the vast bulk of medical care is given outside the confines of the hospital ward. This raises serious doubts about the wisdom of using the bed as the primary unit for assessing utilization of hospitals or other health facilities.

Another assumption states that the object of the health services of a society is to keep people out of the hospital and that hospitals only deal with the failures of the health services system. If the health services are unsuccessful in maintaining a high level of health in the community and in keeping people well and functioning at a socially productive level, they may collapse and require the services of the hospital. If this assumption is valid, then the hospital administrator, instead of considering improved ways of filling beds, concerns himself with improved ways of getting needed services to the consumers at an earlier state in the natural history of disease. Again, if you accept this assumption, you get away from the idea that the bed is the primary unit of medical care.

CONTINUUM OF SERVICES.—Many of the discussions during the past two days seem to have been closely identified with the bed and the notion that the only legitimate patient is the horizontal patient between clean sheets. There has been little discussion about the health facilities required for the vast bulk of illness, which extends between the needs of the person who just doesn't feel well and the expensive care provided on the traditional hospital ward. What I am suggesting, therefore, is that it is extremely difficult to discuss hospital utilization without considering the alternative facilities and resources for providing patient care. Even within the hospital it is important to discuss the problem in relation to levels of nursing and patient care required in accordance with the concepts of graded or progressive patient care, for example. There is a wide continuum of services to consider; and I would like to mention briefly several areas in which research might possibly be carried out.

If we regard it as desirable to look at units of medical care and health services other than the traditional bed, one of the most promising might be the patient himself. We could forget about beds and study the natural history of medical care or even the natural history of symptoms. We are plagued with the notion that disease has to be measured or defined by the finite labels given to it by the university physicians on the teaching wards, and the notion that you cannot have a recognizable medical disorder until some doctor names it. Sir James MacKenzie, almost 50 years ago, set out to study the natural history of symptoms, to see what happened to the people's complaints and symptoms over the months and years, and to determine what the final outcome was. In the last analysis, it is the complaints, symptoms that interest patients. MacKenzie took patients with assorted complaints and followed the natural history of their medical care. This kind of cohort study, applied to the utilization of health facilities, including, of course, hospitals, might provide important insights into some of our problems of over-, under-, and inappropriate utilization of these facilities.

Studies are needed of the circumstances under which different types of patient care are needed, demanded, and provided. Why is it that most physicians are most comfortable looking af-

ter patients on hospital wards? What could be done to provide the specialized facilities, organization, and personnel required to make it possible for physicians to provide equally exemplary and even more effective care of its kind outside the hospital ward and even outside the hospital? This involves looking at the physician, the nurse, and the other health personnel as primary units, rather than the bed or the institution as the primary unit. Specifically, what needs to be done to improve the capacities of physicians to work as comfortably, effectively, and enthusiastically in outpatient departments, clinics, and offices as they do in hospital wards? If we knew more about this, we might be able to shed more light on the problems of hospital utilization.

We really do not know much about the aims and values of hospitals as institutions. It is assumed that they are "good" and in the best interest of society. But specific analyses are lacking. Although the social scientists have been entering this field with increasing enthusiasm and productivity, more activity is needed. I am told that a recent paper published in Germany is entitled "The Sick Hospital." There is really no institution in society that has as many conflicting aims, objectives, and roles as the hospital. There are the patients, trustees, physicians, nurses, medical students, residents, housekeeping personnel, telephone operators, and receptionists, to say nothing of the administrators and accountants—all with different goals, aspirations, and understandings of the situation. We need to have a great deal more information about the social structure of hospitals and the interacting social and personal factors which condition the therapeutic community in which patients are expected to improve. How can the human resources in the health field be organized most effectively to promote the recovery of patients? What human factors encourage patients to shift from their beds to other health facilities at the most appropriate time? The approaches developed by Gofman, Friedson, Revans, and King all need wider application. No simple solutions will be forthcoming, but there is a need for a better understanding of the milieu in which patient care takes place.

IMPROVED COMMUNICATIONS NEEDED.—We need studies of information flow. How do the various health professions, their patients, and other groups communicate with each other? Certainly we need studies of the quality of care, but we need to go further back than that. In one study carried out at Chapel Hill, in the outpatient department, we found that some 17 percent of the clinic patients did not have their chief complaint touched upon—the principal thing that brought them to the hospital was not investigated at all. How frequently does this sort of response go on in other institutions? Such failure of communication can hardly fail to affect utilization patterns. As further evidence of poor communication, we found that some 60 percent of the patients coming to the clinic entered into a consultant arrangement with that clinic without any relevant medical or social information being provided by the referring physician. This occurred in spite of strenuous efforts to obtain adequate referral information. Is it any wonder that there is inappropriate utilization of health facilities when the most elementary forms of communication are neglected? Perhaps these are typical examples, but there is enough evidence to suggest that the matter should be examined more extensively.

As an example of inaccurate, if not purposely misleading, communication, one may cite the whole unprofessional, if not unethical, business of arranging for hospital admissions under guises of one kind or another to satisfy the needs of insurance carriers for payment of the bill, for admissions officers or administrators to jusitfy the demand for a bed, or for house staff or consultant physicians to interest them in the patient's problem. Again the whole approach to patient care is geared to the outmoded concept of the bed as the primary unit of medical care. The approach is to justify the use of a bed rather than to obtain appropriate patient care.

Referrals of patients to outpatient departments may be similarly made in misleading ways, particularly when the physician wants to shift or transfer responsibility but is not prepared to say so clearly. We asked physicians why they referred patients to the hospital clinic and we were given altruistic statements about the need for diagnostic facilities, better judgments, and wiser opinions of the kind which might be available in the particular clinic or hospital. When asked, however, why a particular patient was referred, we were frequently given such comments as "to get rid of her," "to get her off my hands." This is the same sort of phenomenon Dr. Davies spoke about this morning when he spoke of patients being "dumped" on consultants. "Dumping," how-

ever, isn't a very satisfactory way in which to deal with the consumers' needs for medical care; nor is it a particularly responsible way to utilize expensive social facilities such as hospitals and clinics. There may be very good reasons for shifting responsibility, but these should be clearly stated. We need to know more about the reason why some physicians dislike dealing with particular types of patients, and we should provide services which will meet these needs rather than having the needs communicated in some form of traditional jargon which seems to justify appropriately the demand for a bed or a service.

OTHER PERTINENT RESEARCH.—There is a need for studying information and patient flow in the broader context of regionalization. Studies of the sort that Newell has done of the grass-roots basis for patient's patterns of travel to and from institutions are needed. If we studied ecologically, the commuting and trading patterns of communities and regions, we might be in a better position to project a more rational dispersement of our medical facilities and resources than has apparently been provided on the basis of centralized planning with minimal study.

One of the great advantages we have under the voluntary system in this country is the opportunity for many different kinds of experiments. Britain and the Scandinavian countries each have one grand experiment per country. As a consequence, they are somewhat limited within that framework. They have many possibilities for studying their particular system but there are constraints. In contrast, we have many opportunities, and there is a great need for experimentation of all kinds. Accompanying this is the equally great need for evaluation of the results of any kinds of experiment. Even in the field of human behavior there are now techniques available for comparing the behavior of relatively large groups of individuals.

I should like to mention the need for creative architectural studies. Here again we are plagued with the bed as the primary unit of medical care. Instead of thinking in terms of this stereotype, surely we could write new kinds of programs for patient care, describe new forms for therapeutic communities, and the sorts of environments in which patients are found to do well and improve. We could then give these descriptions to the architects and let them design a completely different type of facility. At the present time, we usually describe a need for a number of new beds instead of providing an architect with a program and allowing him maximum opportunity for creativity. Why must we always have to do our thinking about patient care in relationship to the bed?

RESEARCH METHODS.—Now, a word or two about methods. I will not repeat the points Dr. McNerney covered, but there is a real need for developing adequate methods in this field. In the Health Services Research Study Section we see many applications dealing with important problems, which it is proposed to tackle without having available an instrument or method suitable for investigating the problem. Take the matter of progressive patient care. Our group has been looking at the criteria used for classifying patients. In a sample of over 1,200 patient days, for which we have independent classifications by nurses and physicians of levels of patient care needed, there are substantial discrepancies. At the intensive care level there is agreement between physician and nurse about the level of care needed in 54 percent of instances; at the intermediate level the agreement is 87 percent; and at the self-help level the agreement is 37 percent. It seems clear that until we have some kind of reliable instrument for assessing nursing care needs, it is unlikely that we can make much headway in evaluating or even implementing progressive patient care.

We have both a tremendously difficult and at the same time challenging field in medical care research, hospital research, health services research, or patient care research. This is a continuum and the various substantive areas are in process of gradual definition. In any of them, however, it is important to select reasonable problems which can be tackled with reliable methods.

These are some of the directions in which, it seems to me, research of various kinds in the health services field needs to be encouraged. I have sketched out all this on a bit of a "cloud 9" level in order to encourage a broader view of the health services problem than that which is solely concerned with bed utilization. We have heard some excellent discussions about hospital utilization studies; but surely we need to know much more about the whole system in which "beds" and all the alternatives to bed utilization are needed, demanded, and used.

One final word or two about communication. Certainly a meeting of this kind does a great deal to promote exchange of ideas. There is still a great diversity of unrelated arenas in which repetitive discussions of health services research take place. Not only are there local, regional, and national conferences, but there are the public health journals, hospital administration journals, medical and nursing journals, behavioral science journals, and journals devoted to chronic disease, rehabilitation, and specialized problems. There are journals not only in this country but in other countries as well. There are the abstracting services and there is the new journal *Medical Care*. The readers of one group of journals or the participants in one set of meetings may rarely know what is going on in the other conferences or in other publications. There is a real need, it seems to me, for some new form of communication, perhaps a broader sort of abstracting service than that available from the American Hospital Association or the Ministry of Health in Great Britain. Perhaps the Public Health Service might provide this kind of service, and I am sure they would welcome suggestions.

The Health Services Research Study Section is going to meet later this week and we hope to discuss possible approaches to programing and to ways of encouraging a variety of investigators to enter the health services field. In addition, we shall address ourselves to the problem of communication and will welcome any suggestions.

THE CHAIRMAN:

Thank you very much. Now then, I would like to again call on Dr. Brotherston for his comments on research or anything else.

The Patient as Dominant Partner

DR. BROTHERSTON:

Thank you very much, Mr. Chairman. It is irresistible, of course, to be allowed to sound off about things that ought to be done, especially when I have no responsibility for showing how I would do them or what it would cost.

Looking at the system of medical care and areas for examination in a very general sort of way, the medical care system operates essentially as a partnership of patients and doctors in relation to professional people and administration, and I think that each of these areas needs some examination in terms of this partnership. The dominant partner, of course, although this isn't perhaps sufficently recognized, is the patient. The whole system goes into action simply because of the patient's aggravation—he presses the button and then the doctors and others jump about and do their stuff.

How good a job is the patient doing? I think that in our kind of situation, where we are claiming to provide total care for our population, it would be just as well if we could have some system of spot-checking from time to time as to what sort of a job the patient is doing in working the system. I think that Odin Anderson referred to some of the kinds of opinion studies that we need. Of course, we have glimpses of this kind also, but not so well-formulated.

There is no doubt that a considerable amount of patient-recognized illness exists which has no attention paid to it by the doctor. My opinion is that this is in the clinic and in the early visits, and is very often the outcome of a rather fatalistic kind of approach—that these doctors cannot do anything for this kind of thing anyway. However, I think that some system of spot-checking the population, some clinical checkup system is a necessary control for our kind of service if we are really to know what sort of job we are doing. It is very difficult to work out the methodology but highly desirable to be able to do it.

Also, I think we need to examine professional self-controls much more carefully. In the last resort this is the only kind of control that really matters. Some of our older forms of control essentially have been markedly changed, of course, because the private enterprise element has been taken out of our medical care system. This may make it all the more necessary to examine new kinds of self-control mechanisms.

It is disappointing for us to learn that your internal audit has rather run on to evil days and doesn't seem to be held in much esteem. But some sort of answer is needed in terms of feedback on the part of the professional group on the one hand, and the group on the other hand which receives this and passes judgment on it. This, I am sure, is the basic mechanism, and we need to know more, from experimental studies, about what information to feed back and what sort of group you have

to feed it back to. If the group works effectively, does it always inevitably depend on one leader as seems to be the case at the present time? Or can group situations be devised which place you less at the mercy of the emergence of some particular figure?

When it comes to looking at the effectiveness of clinical work of the medical care systems, I am impressed with the potential values of the "so-what" kind of study that we have been talking about today. I think we need to recognize the weakness of the individual single hospital episode as a source of information. We must not forget that hospital care is episodic and may bear very little relation to the final outcome as far as the condition is concerned. Therefore, I think, we need a much more epidemiological approach.

Perhaps the greatest single problem we have in terms of clinical organization is in the field of general practice. I believe that there are certain kinds of problems that you cannot approach except on an experimental basis. You can talk about alternatives until you are blue in the face, but until you have had a chance of examining them and comparing them and the outcome, you really do not know how to proceed.

One of the weaknesses in our health service has been our comparative inability apparently to experiment. We need some substantial experimentation in new forms of organization of domiciliary care in order to bring about the technical and other support needed, as I indicated this morning, and perhaps alternative systems of remuneration as well.

Now, on administration, I am impressed with the kind of approach which various agencies are at least attempting to take. This work needs validation, but I am sure that this kind of look at the hospital system is helpful. We have had this idea of interpreting the community in our minds for some time now. Is this a valid concept or not? Is it true that by organizing your clinical arrangements in different ways you can in fact increase the total therapeutic effect? For example, as opposed to individual therapy for patients, can you improve medical care by bringing not only staff but other patients into the situation as therapeutic agents? This may be more important in long-term care than in short-term care, but it is surprising that there has been so little study of this particular concept, even in the terms of simple organization—of patients' living relationships to each other. So, does this make a difference, or does it not?

Then, looking at the total, of course, there is this question of communications, which, as Dr. White has said, is quite vital—communication intraprofessionally, communication between the profession and the patients—and we have all sorts of evidence from our system that our communications do not work too well much of the time. We need a great deal of study on this, in a system which is inevitably articulated out of different subsystems. And, finally, this question of communicating among and to ourselves; I very much welcome what Dr. White said about this.

I am grateful for the opportunity to come over here to listen to all of these things that are going on. I realize that we don't know about them and if we had not been here, we would never have heard about them. It is not so much a question of the formal publication which I suspect can usually be tracked down, but so much of this work never gets into the final formal kind of publication. Therefore, I think it would be tremendously valuable if some editing service would bring together and discuss the work which has been done in the preceding year. Certainly I know that we would find this a very valuable service indeed.

DISCUSSION

THE CHAIRMAN:

Today, it seems to me, the panel is summarizing in great wisdom a number of points that would be worth rereading and thinking about, because what each said is exactly what I had hoped would come out in this panel.

We are now open for discussion and comments.

MR. H. E. KLARMAN:

I would like to say something about the experimental method that has been recommended. I think that there are very few laboratory conditions under which you can control all the variables in the situation. So what you typically get is some kind of program that comes into effect, a major change, and you want to look at it. I think that the difficulty there is that we miss many opportunities. Right in front of us we have the devel-

opment of the psychiatric unit of the general hospital, which has been going on for several years. Have we been looking at the effect, if any, on the admission rate of the State mental institutions? What about the relationship between State mental institutions and the nursing home?

Right now in Baltimore we are switching our well-known medically indigent program from a salary basis to a fee-for-service basis. You say that somebody ought to do it, but nobody is looking at it. I think that here again we are going to miss an opportunity.

On a more narrow framework, I would make this suggestion in connection with the various utilization studies. I would like, in the future, to see a greater emphasis on length of stay. I think there is more of a pattern of this than perhaps we have realized. I think that we will find much larger differences in length of stay than we have found in admission rate.

DR. McNINCH:

Just for information, the American Hospital Association is preparing, as a result of various recommendations of its advisory council on research and education, an up-to-date bibliography in the hospital field. This will be presented to its advisory committees, hopefully, in February and March for discussion as to contents and format, whether what is needed is an annotated bibliography, an extract publication, a review or digest or what. I hope that something will come of this. It is in process at present.

MR. McNERNEY:

Would you elaborate on the more important aspects of length of stay?

MR. KLARMAN:

I thought that length of stay was important because of my experience in checking out two of the studies, the one Jo Williams reported on and the one that Paul Densen studied. In Paul's case I compared the admission rates and length of stay of his samples in relation to the respective population in New York City from which they drew. You see, he merely matched the sample—he did not know whether or not they were representative. I found a rather small difference in admission rates and a very big difference in length of stay. This is in connection with some of the reasons that Sam Shapiro mentioned yesterday.

In the case of the Williams study, her findings for admission rate were substantially the same as those in the national health survey for a given or same population. I proceeded to check out for length of stay and again I found a big difference.

REPRESENTATIVE:

I would like to make a comment about statistical studies and utilization. Dr. Klarman mentioned more work on length of stay. It seems to me that most of the statistical studies of utilization have been confined to descriptive or empirical studies. There is another branch of the field of probability in statistics which really treats the dynamics of test processes—the census of hospitals, occupancy—really the interaction of several processes—the admission or input process and length of stay—the throughput process. If one were to study utilization from the point of view of interacting dynamic processes, I think you could get a lot more information from the statistics than we get from the tabulation of statistics.

It has been interesting to me to hear our English visitors refer to the operational work done in England and to note that operational research in this country seems to have been confined to study of internal hospital operations and not applied to the community use of hospitals. Perhaps it is because of the regional organization in England that these researchers have looked at the regional problem first. Nevertheless, I think that the comments today, compared with the American comments, and the kind of statistics applied, would show an opportunity for us in this country to look at some of the dynamics of the processes.

DR. P. M. DENSEN:

I would like to ask Dr. Flagle to expand on that just a little bit. I think that the idea of the dynamic approach is something that would be extremely worth while, but in the application of this approach you have to have some kind of observational data to work with. I would appreciate it if you would expand a little bit as to the kind of observations needed to carry out this kind of approach.

DR. FLAGLE:

The data would have to be observed in the form of sequence of events, the times of successive admissions to a hospital and the sequence of length of stay. From studies of these interactions, in lieu of certain constraints, one could see what kind of occupancy is possible. I believe that Dr. Blumberg, using this approach, at one point indicated that an obstetrical unit is about 80 percent occupancy and occupancy really implied 100 percent use of facilities. However, you would have to look at it from the point of view of the dynamics—have it quoted to you correctely. Therefore, this really involves the collection of data perhaps in a more detailed way than would be necessary for tabulating statistics, and then studying the way things happen with respect to time.

MR. McNERNEY:

This would include services during the stay?

DR. FLAGLE:

Yes. It makes the observational process more difficult but, as far as I can see, it is the only way one gets to the root of some of these problems, such as what makes up the two days of turnover-time that Bailey uses in his approach to the study of hospital populations. I should think the turnover studies would involve the study of what happens almost from minute to minute following the discharge of patients and during the process of admitting new patients, to get to the root of the turnover-time problem. However, it is the observation of events in time that would be at the heart of such statistics.

MR. WECKWERTH:

One of the things that we wanted to investigate in the study was this kind of sequential thing that you are talking about. It was also alluded to in the Michigan study yesterday—the necessity of knowing the occupancy at the time the patient is discharged. This is the kind of thing that we did investigate. We have the data on this kind of thing because we felt it was relevant to know what the occupancy was at various services and we also had to know the impact upon the entire community at any given time rather than just from an individual hospital.

In St. Paul, we now have all hospitals reporting on a standard form, with standard data from all of them for every admission in St. Paul. It will be done with all of these things so that we can check on a day-to-day basis the kind of occupants that we have, the kind of services, the length of stay.

We have the information to study average lengths of stay with respect to weeks of the year. We have this all laid out by week of the year for the entire year. This information also relates to demands for use. I am puzzled by this because if I were a hospital administrator I would certainly want to know the experience during the summer months.

It is interesting to note that obstetrical services in the entire Twin City area are down 15 percent during the Fourth of July, 16 percent during Memorial Day week, and 12 percent during Labor Day weekend; they fall off very badly during Christmas and are down 15 percent the week before the end of the year and 17 percent the week after the end of the year, and are 12 percent above the last day of the year. It is things like this that bother me when we say that bed supply determines use. I am not completely sure what this means, because we seem to be short of beds on Thursday during the fourth through the seventh week of the year but never at any other time. And all of this cyclicity—which is the world in which we live—has to come into what we mean by use and structure of beds and the way we analyze data. It seems to me that if you tell me the kind of occupancy you want, I will check the days of the year and give it to you.

This information also relates to the characteristics of the patients who happen to be in the hospital. If you want to find out how many do not need to be there at a particular time, you tell me what level you want and I will find out the date during the year when they probably will be in there. If you also want to find out what day of the year everyone really needs to be in the hospital, then I will give you Christmas eve and we will have this nailed down.

So, I am not completely sure where the economics fit in and where we should study. But we wanted to get it from the composite of the entire metropolitan area so that we did not have sample bounces and selection factors and, therefore, this is the way we are working.

Closing Remarks

DR. HALDEMAN:

On behalf of the Public Health Service and, I am sure, on behalf of the American Hospital Association, I want to say that you have made this a most stimulating meeting, and I am really enthusiastic about it. Again we should recognize that we all owe a debt of gratitude to George Bugbee, who did the real hard work, and to the very excellent staff work of the AHA on conference arrangements.

I would like to ask one question. George and I have talked for a long time in terms of the importance of this general area of research and we collaborated a year ago, as I think most of you know, on a preliminary conference of this type. We then felt that it would be desirable to follow it up with a more structured meeting bringing in more broader groups.

I would like to get some feeling from the group as to whether such a conference as this should be repeated and, if so, how soon—a year, 2 years? One of the great benefits of this meeting, it would seem to me, actually had to do with the progress reports on projects under way. Secondly, I think that it was extremely helpful that so many of the people on the program were describing also things that did not work, and some of the things that you had to look out for in using and interpreting statistics, which you do not ordinarily get when you read the published reports.

Therefore, I would like to have some comment on that. Would it be worth while to repeat at some future date?

THE CHAIRMAN:

Are there any comments on this point? I think that you may, over a period of time, have thoughts about it and I think it would be helpful if you would write to Dr. Haldeman about it.

Mention has been made of the need for communication between those doing research. There are some such devices now that we are all familiar with, both in printed words and in gatherings, but none of them seems to quite do the job that needs to be done. Granted that it can never be completely accomplished; even so it would appear that with more thought we might improve communication between those concerned with research in the hospital—hospital having a very broad definition, as has been evident here. Therefore, if you do have comments, Dr. Haldeman and I would appreciate having them.

Dr. McNinch, do you have any final words that you want to say?

DR. McNINCH:

I will make mine very brief. I will say Amen to what Dr. Haldeman has said.

THE CHAIRMAN:

I will not try to summarize. Both Dr. Haldeman and Dr. McNinch, representing the sponsoring organizations have been complimentary to me, out of proportion, I think I should say. In response, however, I think that I should say that I am responsible for the faults of this meeting to a degree. We set the objective of examining opportunities for further research and it was necessary to select people who would appear. As I look around at the talent in this audience and see how many there are who have not been on the program I am conscious of the fact that we have not tapped all of the talents by a long ways. My apologies for that to the degree that I am responsible, although, obviously, we have had good program content.

I never have conceived that this meeting was really a meeting of researchers for examination in depth—an exchange of ideas on specific projects. Our hope was that it would spark ideas and stimulate more research in the broad field of use, and I trust that it does have some such effect. I think that in trying to keep to that objective, several times the audience has missed the opportunity for pursuing intriguing ideas that might have been presented in a somewhat differently structured conference.

Nothing has been said about research applications, and I think it is inappropriate to say very much. You all know that there are a number of foundations interested in this field that we are talking about. We know that there has been in-

creasing Federal money. Dr. White, as Chairman of the Study Section, has been asked for an opinion. I am a member of the Federal Hospital Council that reviews some of the applications. I think that Congress has been rather generous in its appropriations of money, and I think there is latitude for more well-structured research within the funds available, in not only methodology but also relative to projects.

I could not help thinking, as Paul Densen mentioned about the remarkable demonstrations that they were doing in New York City and the plans they have for careful evaluation, that there is money for demonstrations which evaluates both the hospital field and, I think, community facilities. This, of course, is not an easy research area—there are not endless people qualified to do it and those who are qualified are pretty busy with projects.

There is latitude for more attention and, I think, financial support for more effective research at a greater volume. I hope that may be one of the products of this conference.

I don't think I could thank the speakers enough for the effort they have made and I particularly feel indebted to Dr. Brotherston, who did such a remarkably fine job in giving us an overview of the research in hospitals and medical care that has been going on in Great Britain. I also appreciated the comments of Dr. Davies, and it was pleasant having both of them here. I think all of these papers have been excellent—they were not easy assignments for the speakers. I know that I express for all of you our appreciation of the efforts they have made.

Thank you all for your attention and Godspeed in getting home. (Applause)

(The meeting was, at 3 : 25 p.m., adjourned sine die.)

APPENDIX I

Some Differences in the Usage of Hospitals in the United States and Great Britain*

BY DR. S. L. MORRISON AND PROFESSOR J. H. F. BROTHERSTON

The financial sources of published data on hospitalization in the United States and Britain are the health statistics compiled for the U.S. National Health Survey and the Hospital Inpatient Enquiry carried out by the Ministry of Health and the General Register Office. The American data were collected by interview for the sample household in the National Health Survey, and provides information about patients discharged from short-stay hospitals (those in which most patients stay for less than 30 days) in the year July 1957–June 1958. Such hospitals include 95 percent of all discharges. These data only include persons living at the time of the interview, and thus tend to underestimate the total number of discharges since the hospital experience of those dying in the year before the interview period is excluded. The British data arise from the completion, by virtually all hospitals (in 1959) in England and Wales, of a form for one patient in ten after that patient has been discharged (or has died). The sampling method used ensures that there is no bias in the selection of cases.

Dr. R. F. L. Logan (1961) used these and other sources to make some interesting comparisons between hospital usage in the U.S.A. and in Britain in his Milroy lectures. Logan showed that, while the number of beds for 1,000 population is very similar in the two countries, the admission rate is approximately 60 percent higher in the U.S.A. (Table 1). It follows that the mean duration of stay in hospitals must be lower in the U.S.A., and tables 2 and 3 illustrate this for certain selected diagnoses. Table 2 shows that the average length of stay for surgical conditions is 40 percent shorter in the United States.

A comparison of the length of stay for medical cases is more difficult because many of the British patients are elderly and have been discharged from (or died in) chronic disease hospitals. To get around this difficulty, the length of stay in English teaching hospitals is compared with some North American figures. The teaching hospitals in England cater to a lower proportion of old people and have a markedly shorter average duration of stay than nonteaching hospitals. Even so, it is clear from the table that the American length of stay is not much more than half that of the English teaching hospitals.

Why, then, should there be such large differences in usage in the two countries? Are these differences a reflection of the different methods of financing medical care? Table 4, comparing discharge rates for certain diagnoses, does tend to show that conditions treated mainly surgically show large differences in discharge rates between the two countries, although there are exceptions.

Table 5 illustrates an apparent difference in the social needs being met by hospitals. This table suggests that admissions in England may be more influenced by social need than in the United States, i.e., the much higher ratio of unmarried to married in England may reflect a policy of admit-

*Submitted by Dr. J. H. F. Brotherston as an appendix to his paper.

ting more patients because they have no one to look after them at home, rather than on purely clinical needs. Perhaps the higher proportion of such patients helps to explain the longer duration of stay in English hospitals. However, Peterson (1962) has pointed out that many diseases appear to have lower admission rates in Britain but higher case fatality rates, suggesting that "hospitalized British patients are almost certainly much sicker." It is difficult to reconcile this finding with the indications of "social need" admissions in Table 5. In fact, many of the inferences drawn in this appendix are based on very slender evidence; a detailed study of differences between selected areas of the U.S.A. and Britain might lead to more useful conclusions.

Table 1.—A Comparison Between Medical Resources in the United States and England and Wales

(Adapted from Logan, 1961)

	Hospital beds per 1000 population (excluding TB and mental)	*Admissions per 1,000 population*	*Doctors per 10,000 population*
United States	5.0	136	14
England and Wales	5.4	84	11

Table 2.—Average Duration of Stay (Days) in Hospital for Certain Surgical Conditions

(Adapted from Logan, 1961)

	United States (a)	*England and Wales (b)*
Tonsils and Adenoids	2	4
Appendicitis	7	11
Hernia	9	14
Haemorrhoids	8	13
Diseases of Gall Bladder	14	20
All Surgical	7	(c)11

(a) U.S. National Health Survey, 1958.
(b) Hospital Inpatient Enquiry for 1956–1957, 1961.
(c) Forsyth and Logan, 1960.

Table 3.—Average Duration of Stay (Days) in Hospital for Certain Medical Conditions: Indiana 1956, Saskatchewan 1957, English Teaching Hospitals 1957

(Adapted from Logan, 1961)

	Indiana Blue Cross (a)	*Saskatchewan (adjusted) (a)*	*England and Wales Teaching Hospitals (b)*
Influenza	6	5	9
Pneumonia	7	9	16
Bronchitis	11	7	20
Vascular lesions CNS	19	27	22
Arteriosclerotic heart disease (including coronary)	18	20	26
Hypertensive heart disease	12	14	20
All diagnoses	7	10	15

(a) Lerner, 1961.
(b) Hospital Inpatient Enquiry for 1956–1957, 1961.

Table 4.—Discharge Rates for 1,000 Population for Selected Diagnoses

	United States (a)		*England and Wales (b)*
	Total	*(Surgically Treated)*	*Total*
Diseases of skin	1.2	(0.7)	1.4
Appendicitis	2.5	(2.2)	2.8
Peptic ulcer	1.7	(0.5)	1.5
Hernia	2.7	(2.5)	2.3
Allergic, endocrine, metabolic diseases	2.6	(0.6)	1.9
Upper respiratory conditions (mainly tonsils and adenoids)	7.3	(6.1)	5.4
Hemorrhoids	1.4	(1.3)	0.6
Diseases of gall bladder	2.5	(1.5)	0.8

(a) U.S. National Health Survey, 1958.
(b) Hospital Inpatient Enquiry of 1958, 1961.

Table 5.—Ratios Of Discharge Rates* According to Marital Status

(Ratios for married males and married females in each country and in each age group are given as 100.)

	United States (a)			*England and Wales (b)*		
	Married	*Single*	*Widowed or Divorced*	*Married*	*Single*	*Widowed or Divorced*
Males	100	124	155	100	192	174
Females	100	59	102	100	148	130

	United States (a)				*England and Wales (b)*		
	Age	*Married*	*Single*	*Widowed or Divorced*	*Age*	*Married*	*Single*	*Widowed or Divorced*
Males	45–64	100	124	155	45–64	100	192	174
	65+	100	90	100	65–74	100	220	164
					75+	100	281	192
Females	45–64	100	59	102	45–64	100	148	130
	65+	100	73	90	65–74	100	160	130
					75+	100	206	147

(a) U.S. National Health Survey (1958).

(b) Abel-Smith and Titmus (1956).

*The English figures relate to those patients in general hospitals on the day of the 1951 Census, and are therefore not directly comparable with the United States figures.

REFERENCES

Abel-Smith, B. and Titmus, R. M. *The Cost of the National Health Service*, Cambridge University Press. 1956.

Forsyth, G. and Logan, R. F. L. *The Demand for Medical Care*, Oxford University Press. 1960.

Hospital Inpatient Enquiry for 1956–1957. Ministry of Health and General Register Office, H.M.S.O., London. 1961.

Hospital Inpatient Enquiry for 1959, Part I. Ministry of Health and General Register Office, H.M.S.O., London. 1961.

Lerner, Monroe. *Hospital Use by Diagnosis*, Health Information Series 19, New York. 1961.

Logan, R.F.L. *Milroy Lectures in State Medicine and Public Health*, Royal College of Physicians, London (unpublished). 1961.

Peterson, Osler L. *Quantity and Quality of Medical Care and Health*, Paper presented to the American Sociological Association, Washington, D.C. 1962.

U.S. National Health Survey. Publication M:584–B–7, U.S. Department of Health Education and Welfare, Washington, D.C. 1958.

APPENDIX II

Some Measurements in an Organized Health Service*

DR. R. J. PETERS

This short paper deals with information ıinly of a statistical character about the work the National Health Service in Great Britain. nance is not under consideration although some the information that is collected for purposes finance may be useful in this context. We are w concerning ourselves with the collection of ta for the purpose of measuring the amount of rk done over the whole country, and in areas d districts. Thus, the subject is the informan that is collected as a matter of routine for rposes of administration, control and compari-ı. A brief mention is also made of work and ciency studies.

Some sources of information about health tistics—before and during the National Health rvice—are listed, and also some references to rk study.

utine Information

Obviously, any organization that has an adıistrative structure must collect data from the lower levels and arrange that such data be tably supplied to the top levels of management l direction. So it is with the health service ere, however, the routine information required in some respects, difficult to obtain on the basis ıbsolute accuracy and consistency because of the ure of the service and the individual ability of component parts.

Before the establishment of the National Health Service in 1948 statistical information about hospital and domiciliary medical care was so incomplete that a national or even an area picture could not be pieced together. The local authorities presented a certain amount of information to the central government departments in the Annual Reports of the Medical Officers of Health and on a variety of forms which the health ministries required them to fill up. Thus, the central government knew about the number, the position and the work of local authority clinics for tuberculosis, venereal diseases, maternity and child welfare. They also knew something about the results of medical inspection of school children and their treatment at school clinics. They also knew the numbers of notifications of infectious diseases in each local authority area, the numbers of such cases that were treated in hospitals and sanatoria; also, since 1929 local authorities were able to provide a certain amount of information about patients treated in their own general and maternity hospitals. The level of quality of accuracy of the information returned by local authorities varied widely. In some places interest was keen and consequently care was taken in the collection of the data. Where this was so the statistics could be regarded as reasonably reliable. In other areas preparation of routine returns was regarded as something of a chore, with consequent decline in accuracy. Sometimes the forms themselves which the local authorities had to complete would become, through course of time, obsolete. Often local authorities were inclined to think that some of the forms they filled up had survived their usefulness and were merely pigeon-holed in the ministries.

ed by Dr. J. H. F. Brotherston as an appendix to

One of the morals of this is that it is perhaps easier to start a routine form of enquiry than to end it.

The voluntary hospitals were individual enterprises owing no duty to provide the ministries with statistics, each one only publishing what information the Board of Governors or Managers thought necessary. Many of the bigger hospitals, however, in their annual reports published a fair amount of information about inpatients, admissions, discharges and deaths, the diagnostic categories of the patients, surgical operations done and the work of special departments.

On the whole the need for national information about the work of the health services as they existed then was not apparently strongly felt and there certainly was no burning desire among the authorities in general to do much towards producing accurate primary statistical data or to do further work on the data after they had been obtained. One must conclude that a considerable amount of effort was wasted largely because interest seemed to be lost in the statistics as soon as they were submitted or published, perhaps because of their alleged unreliability. Even now special surveys are often of necessity set up to collect information, whereas the routine statistics ought to be good enough to provide an answer.

Hospitals: Case Load and Occupancy

What then is the kind of information thought to be necessary on the national scale and has in fact been collected as a matter of routine? Taking first the hospitals, it is obvious that there should be reliable statistics of the numbers of admissions and discharges of patients, their age and sex distribution, their classification according to the kind of hospital accommodation they occupy, whether acute surgical beds, acute medical beds, obstetrical wards and so on. The average duration of stay in days is also needed for patients in classifications such as medical, surgical, obstetric and so on, and for the different kinds of hospitals and hospital departments. The number of new attendances and total attendances at the outpatient departments is required, also subdivided according to hospital department. All this data is in fact collected and published. The figures can be broken down to show patients in geographical areas of residence, the type of hospital, and hospital department.

Each hospital also provides data at fixed periods about the number of beds in the hospital, classified as the complete bed complement, staffed beds, unstaffed beds, and occupied beds. The hospitals themselves will work with these figures and derive from them and from censuses of patients in the hospital from time to time information such as the percentage occupancy of hospital beds in bed categories, the turnover of beds, the turnover interval between patients, and average length of stay of patients. Departmental hospital statistics are also provided by the hospitals about the usage of laboratory services, X-ray departments, the consumption of drugs, dressings, and appliances.

Hospitals, as a matter of course, also provide statistics about the numbers and grades of staff—medical, nursing, administrative, other professional and technical, domestic and maintenance.

Some of this or similar information is collected and presented in relation to financial returns. Where this is so the figures should tally or should be reconcilable with information which is contained in the administrative forms or returns that relate to the functional activities of the hospital inpatient care and the range of the hospital services.

Costing returns are obtained from hospitals to permit analysis of weekly running costs per patient bed by type of hospital, and broken down into sections for staff; wages and salaries; drugs, dressings, and appliances; catering and food; heating and lighting; housekeeping and maintenance. Analyses of costs are now also made functionally by departments, for example: wards, theatres, X-ray departments, etc.

It may be said that all this information is primarily of an administrative character and, apart from the data relative to individual patients, contributes little to knowledge about the nature and quality of the services rendered. The data about bed occupancy can, however, tell something about the usage of beds. From the returns of admissions, discharges, and waiting lists various averages can be calculated such as the average duration of stay per patient and the average turnover interval. From the waiting list figures a certain amount can be cautiously deduced about the pressure on hospital accommodation.

The main value of all this information however, is in enabling comparisons to be made indic-

ative of change or progress year by year. It can show the gross change in the number of available staffed and occupied beds, the increase or decrease in the numbers of staff of various grades, the changes in the average stay of patients in hospital, and the switch of demand from one type of hospital bed to another. The figures are also useful in comparing region with region and hospital with hospital. Even with the crude figures available enough may be extracted to warrant further and more detailed investigation on the spot to explain differences that are found between individual hospitals and the variations that occur in different geographic areas.

There are, of course, reservations upon the acceptance of some of this information; for example, the numbers on the waiting list for admission. It often happens that a patient is put on a hospital waiting list for some complaint that is not of an urgent character. Such a patient may go elsewhere for treatment; he may die; he may decide to carry on without the treatment recommended; the condition for which treatment was recommended may resolve itself and hospital treatment may no longer be required. Sometimes the very act of placing a patient on a waiting list seems to interrupt communication between the patient and the hospital and between the patient and his own doctor for a very long time.

Change in the number on a waiting list between the beginning and the end of the year is taken sometimes as an indication of demand for hospital beds. This may lead to a fallacious conclusion. There may, in fact, be no real increase in demand even if there is an increase in the waiting list. A detailed scrutiny of the individual cases on the list is necessary before valid conclusions can be drawn. Furthermore, an increase in the waiting list or indeed a large waiting list in itself, may be better interpreted as a need for better administration and better deployment of staff and resources than as a need for more accommodation. A waiting list for routine operations of "cold" surgery can be wiped out by running additional sessions or bringing into use unoccupied beds perhaps in another hospital, or rearranging the disposition of beds between specialties. To do this indeed may cost money for additional staff, temporarily perhaps, and this may be the obstacle. The waiting list may thus be a challenge to the administration and a problem of finance rather than a demand for new building.

Care must also be taken in interpreting outpatient figures. High outpatient figures may represent a transfer of responsibility and work from general practitioner to hospital, or, on the other hand the outpatient department may be doing work that in other hospitals is done in the inpatient wards. Minor casualties and emergencies are often included, and one patient might on one day be counted several times if he visits different units of the outpatient department in the course of his diagnosis and treatment.

Staff enumeration also presents difficulties. Figures are usually presented in the tables in terms of whole-time staff, but many of our hospital medical and nursing staffs are part-time, and the decision as to how many of them are the equivalent of one whole-time staff member is rather an arbitrary one. Consultants who are largely part-time are paid according to the number of notional half-day sessions they attend in the week. It is difficult to present in terms of whole-time staff the number, say, of consultant surgeons in the hospital service in truly realistic figures, for many give more than their covenanted amount of work and, no doubt, some give less. Consultant cover may mean different things in terms of work for different people in differing hospital situations.

General Medical Services

On the general medical services, that is, the family doctor service given by the general medical practitioner, statistical information is obtained from the Executive Councils. Returns are prepared by them as a routine of the numbers of doctors in practice in their area, whether singly or in partnership; their geographical distribution; the numbers of patients on their lists; the number of prescriptions issued by doctors and hence the frequency of prescriptions per person on their lists.

Data are also obtained about dental treatment under the National Health Service: numbers of dentists participating; numbers of courses of treatment; dentures supplied and other relative information; and the amount of treatment given to the so-called priority classes—young children, expectant mothers, and adolescents.

From the ophthalmic service there come data on the amount of sight-testing done and the provision of spectacles.

Information on sickness in the working population and its trends is obtained from the sickness certificates the general medical practitioner issues to insured employed persons. This material is tabulated and processed by the Ministry of Pensions and National Insurance. The Ministry publishes fairly elaborate annual statistical tables giving an analysis by age, sex, regional distribution, monthly occurrence, and diagnosis of cases certified as unfit for work by reason of sickness or accident. While these statistics suffer, perhaps in greater degree, from the same kind of defects of inaccuracy that apply to death certification, they do give a broad indication of the types of illness from which the working population of this country suffer from time to time, and which result in absence from work. When examined in suitable groupings of the diagnostic classification these figures can be very useful even though the accuracy of the individual classifications may be called in question.

Local Health Authorities

The local health authorities, through the Medical Officers of Health, provide the ministries with routine statistics in a set form relating to their functions under the National Health Services Act, much on the same lines as they did before—the number of clinics and attendances; the number of health visitors, district nurses, midwives, and the visits they make; and possibly some classified description of these visits. They also supply information about the "home help" service and the kind of cases or families which are given this service. Details of preventive medical measures are also supplied as a routine—the number of immunisations and vaccinations. The local authorities also report on the work done by the domiciliary midwifery service. Medical Officers of Health also prepare statistics on births, infant and maternal mortality, and other matters such as school health and environmental health which are not functions within the National Health Service but are closely associated.

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Hospital Morbidity

Ever since the inception of the National Health Service the need has been felt for information that would show what the hospitals were doing in the way of providing medical care, not merely how the hospitals were run and what they cost. One wants to know who the patients are, their age and sex distribution, where they come from, who sent them to hospital, what was wrong with them, what treatment was given and what was the result. While general figures are useful from the administrative and financial point of view the main preoccupation of the hospitals is inescapably the treatment of disease and accidents and it is therefore highly important that as much as possible should be known about what they do in this respect. To obtain useful inpatient morbidity statistics on a nationwide basis has been difficult. A system has been building up in England for many years but only within the past two or three years has anything like complete cover been achieved. In Scotland a scheme has been put into effect but nothing has so far been published. Some individual hospitals have, however, made yearly analyses and have published tables showing the kind of cases they treat and what they do for them. Some Regional Boards also have morbidity recording schemes, and special studies in collecting and tabulating of routine statistics have been carried out by the Nuffield Provincial Hospitals Trust. The general principles of morbidity recording for the purpose of providing a general picture of the kind of work the hospitals are doing are by now pretty well established.

Essential Data on Hospital-Treated Morbidity

Essential or basic data are identification particulars of the patient: his age, sex, civil status, residence, occupation, date of admission and discharge; how he came to be admitted—through his general medical practitioner or otherwise; the final diagnosis of the disease for which he was treated and any associated or underlying morbid condition; classification of any operation performed; and date and particulars of discharge or death. Additional questions must be asked and variations introduced for obstetrical cases and for

infants born in hospitals. A slightly different form of enquiry is also used for mental hospitals.

Generally speaking, in this type of statistical exercise the amount of information to be transferred from the record card to the statistical card should be kept to a minimum, and readily picked out from the patient's case record which should be designed so as to permit of this. The extracted information is punched on statistical cards and national, regional, and individual hospital tables are constructed.

Questions now arise: Is this information adequate? Should it be extended and improved? There are limitations to the uses to which such routine statistics of this kind can be applied, yet the practical difficulties of extending the scheme are great. In assembling these statistics on a nationwide scale the importance of promptness in return must be emphasized, but there is a lot of work to be done in verification as well and this causes delay even in a simple enquiry. After processing of the data a great deal of further statistical work is required to get the most out of the figures, and to rationalize the presentation of the final tables, and finally to deduce conclusions. Inconsistencies from year to year must be watched. Individual hospital units and Regional Boards should use these figures as the basis of further research and investigation, along with such other information as they may find it desirable or possible to obtain. The Oxford Regional Hospital Board, for example, has done a great deal in this way. New Regional Hospital Boards publish annual reports of considerable interest, but it would be a good thing if all such reports could be constructed under a common framework of order and content that would apply throughout the United Kingdom.

In order to be fully exploited as useful information, all health statistics should be published promptly. Routine statistics that are 3 or 4 years old are, in effect, obsolete, except for comparison with previous years, and decisions based on them may be misleading. The routine administrative and financial information may, under pressure, be made available in good time, but morbidity statistics present some difficulty mainly because of the lack of incentive and interest on the part of the medical staff and the frequent changes of house officers to whom the work is, unfortunately, often left. Slackness in collection and processing can easily lead to a situation, which can be observed in many countries, where these statistics are some years old before publication. Constant pressure is therefore needed to keep them up to date.

The Inpatient Enquiry

In England the hospital inpatient enquiry is carried on by the Ministry of Health and the General Register Office. Forms are filled up from information extracted from the records of a 10 percent sample of all discharges from National Health Service hospitals in England and Wales, other than psychiatric hospitals. Coverage has been virtually complete since 1958. Tables are produced showing the total numbers of discharges and deaths as calculated from the sample in diagnostic groups derived from the international classification. Tables are also given showing the discharges and deaths included in the enquiry by disease, in regions year by year since 1957. Mean duration of stay—spell of hospital treatment—is given for selected diseases. An analysis of maternity cases is given in hospital regions according to type of maternity care given.

This represents the kind of information published annually by the General Register Office and the Ministry of Health in the Reports on Hospital Inpatient Enquiry. The first part of each report is a preliminary set of tables published early. The second part of the Report comes later, is much bulkier, and contains the complete analysis. The value of these reports should be obvious, and it is hoped that they will be continued and that the standard of the reporting will get better and better. The usefulness of the system however, must be kept continuously under review and with experience it may be found that the procedure can be simplified and the amount of work entailed reduced. But meantime the plan should be to let the system run for a number of years. These reports need to be adequately studied and made use of both for the information the reports themselves provide and as a starting point for other surveys and enquiries. Otherwise they run the risk of being in time only superficially examined and relegated to the pigeonhole.

The system of morbidity recording that has been described does not mean that all other enquiries become unnecessary. For instance, there already exists a cancer recording system. The intention here is to register all cases of cancer, to

make a full record of clinical and pathological data of treatment, by surgery, radiotherapy or any other method, and to follow them up systematically each year over a number of years. From these data survival rates can be calculated for different types of cancer according to the treatment received, as well as for cases where no treatment has been given. The success of this system varies from region to region; in some, registration and follow-up is almost complete and special reports are prepared and circulated showing the results as survival rates year by year.

The recording of tuberculosis cases is another example of a system applicable to a special disease where the social implications have been and still are of vital importance. Venereal disease reports from clinics may be quoted as another example, and they are valuable, although cases treated by consultants and general practitioners privately are not included.

DISCUSSION

Some statisticians and clinicians generally are not over-enthusiastic about this kind of statistical exercise. Morbidity statistics tend to be slow in appearing and this is a point those in charge must have in mind; gradually, however, the figures are being made available more punctually. It should be accepted as a maxim that where returns of any kind are received from a section of the health service they should be processed and fed back to those who originally supplied them, so that they may feel that their work has not been wasted. Additional arithmetic has to be done with all these figures in order to relate them to the various denominators of population—national, regional, and local—in order to obtain rates.

At regional level the figures offer opportunities for comparison between the regional and the national averages and also enable comparisons to be made between different hospitals.

When a system is complete the tabulations offer an opportunity for studying trends from year to year and these, studied intelligently in conjunction with the known trends and developments in medical science, may be of assistance in estimating, even if not in predicting, the needs for hospital provision in the future.

Hospital consultants when considering a system of this kind tend to assume or even insist that it can be of use for medical research purposes in their own specialty. Obviously, any form of enquiry or schedule of information designed for serious research purposes on a clinical subject must be specially drawn for that purpose and, indeed, ad hoc for a research project which has been definitely planned. The system however, could be used as a means of identifying the records of patients suffering from any particular disease in a hospital area or throughout the country, and also for directing attention to problems requiring research. In other words, it might be possible to enumerate and locate all cases of a particular classification that had been treated in hospitals so that their records could be extracted and subjected to further examination.

Work Study

Work study, efficiency engineering, or time and motion study (or whatever variant or synonym may be used) is mainly concerned with the investigation of manual operations in work situation in factories, hospitals, or elsewhere. The purpose is to derive from systematic observations the best methods in terms of economy of effort and time, of carrying out particular operations and to solve specific questions in planning and design. The methods employed include time and motion study, the analysis of movement, and the effects of work techniques on quality and on the performance of the personnel. Time and motion studies are made employing well-established techniques. Direct observation records are made of staff on the premises and movements at the bench. For the recording of movements from point to point within the premises, the amount of traffic between various compartments and the time spent in these, devices such as string diagrams and stop-watch records of timing are used. In particular the string-diagram technique has been widely used in attempting to assess the suitability of the design of different kinds of wards and the layout of their annexes for the nursing of patients. The Nuffield Provincial Hospitals Trust have carried out many investigations of this kind, not only in hospital wards but in operating theatres, laboratories, and

lsewhere. The actual study of time and motion in ›ench-work situations has perhaps more applica-›ility to industry, but there are many activities n the hospital service where such studies are of 'alue.

Work study in hospitals is applied also in :hecking the efficiency of X-ray departments, lab-›ratories, catering departments, laundries, stores, ›harmacy, in examining the efficiency of com-nunications and, of course, in administrative and ›ffice work.

Another term used in this connection is Organization and Methods (O. and M.) which, al-.hough it may cover much the same ground is, in ssence, the application of work study procedures owards increasing efficiency in office and admin-strative work.

Detailed movement study springs histor-cally from the work of the Gilbreths (1911) and ›thers. Modern work study methods are ade-quately presented in the books by Curry, R.M. (1960), Nadler, G. (1955) and Shaw, Anne (1960). The industrial Operations Unit of the Depart-nent of Scientific and Industrial Research is also leeply interested in studying and fostering meth-›ds of work study and they have issued some use-ful information on the subject. All these works give a good introduction to the methods, procedure, analysis by tabulation and diagrams, and presenta-ion of the results. Modern methods of observa-ion and recording are discussed at considerable ength by Shaw and they include photography and ine-photography in recording paths of movement, 'or example, movements of the hands in the bench ›perations. Shaw also deals with the training and mployment of work study personnel and carries he matter further into more psychological areas, 'or example, incentives for employes.

Personnel trained in work study methods are ow employed in the Health Service at central government level and in all levels of the hospital ervice. At the hospital level it is not necessary ›erhaps to have in each hospital or hospital group . whole-time motion study expert. It is probably ›etter to arrange for the training of representative ›ersonnel in work study methods and for them to pread the gospel. For example, one of the senior ursing staff might be so trained and make it a ›art of her duty to test and apply the principles vhere she can, or to make suggestions for special-ed work study enquiry into situations where im-›rovements in methods seem possible.

APPENDIX II. SOURCES

Source of Information—Prior to National Health Service

1. Prior to the National Health Service information generally as regards the hospital services was not very complete. Mention might be made of the HOSPITALS YEAR BOOK, first published in 1889, which mainly gave information about the voluntary hospitals. During the war, surveys of the hospital services were made throughout the country, in England by the Ministry of Health in association with the Nuffield Provincial Hospitals Trust, and in Scotland by the Department of Health. These surveys were carried out by medical surveyors who went over the whole field, region by region and hospital by hospital. Annual Reports of the Health Departments gave information about the services administered by local authorities and, to some extent, some information about the services of general practitioners under the National Health Insurance Act. A special survey of the health services was made in 1937 independently by P.E.P. (Political and Economic Planning).

2. ANNUAL REPORTS, Ministry of Health.

3. The four surveys quoted below present the most complete picture of the provision of hospital facilities as they were available before the appointed day for the inauguration of the National Health Service. The war-time surveys also give the surveyors' ideas as to the extent to which hospital services should be provided according to the light of the times. This makes interesting comparison with present-day statistics.

Department of Health for Scotland. SCOTTISH HOSPITALS SURVEY 1946. H.M.S.O.

Gray, A.M. and Topping, A. HOSPITAL SERVICES OF LONDON AND THE SURROUNDING AREA. London: H.M.S.O. 1945. (And similar surveys for each of the other English regions).

P.E.P. REPORT OF THE BRITISH HEALTH SERVICES. 1937.

Department of Health for Scotland. REPORT OF THE SCOTTISH HEALTH SERVICES. H.M.S.O. 1936

Routine Information on the Health Services at Present

1. ANNUAL REPORTS
Ministry of Health and the Department of Health for Scotland (now Scottish Home and Health Department).
Board of Control in England and the General Board of Control in Scotland on Mental Hospital Provision.
Registrar General—England and Wales*
Registrar General—Scotland*

2. Department of Health for Scotland. HOSPITAL COSTING RETURNS (Annually). H.M.S.O.

3. Ministry of Health Statistics Branch. DIGEST OF HEALTH SERVICE STATISTICS, Series A. No. 6. December 1961. (Mimeograph document.)

This gives an extensive summary of the hospital accommodation available in regions, in hospitals and in hospital departments. In all there are 96 tables covering most of the routine information that is supplied from hospital boards and the teaching hospitals, including number of beds staffed, available and occupied, duration of stay, number of discharges or deaths; waiting lists, outpatient statistics analysed by department; staff statistics in medical and non-medical grades. Statistics are also included about local health and welfare services and about the general medical and dental services. Much of this is included in the Annual Reports of the Ministry of Health.

4. Ministry of Health and General Register Office. REPORT ON HOSPITAL IN-PATIENT ENQUIRY FOR THE YEAR 1960: Part I, Preliminary Tables. Part II, 1962, Detailed Tables and Commentary. (Awaiting publication.)

5. Ministry of Health. HOSPITAL COSTING RETURNS 1961. Parts I, II & III. H.M.S.O.
These three volumes gives much information about the expenditure hospitals, costed up in departments and units of service.

6. Oxford Regional Hospital Board and United Oxford Hospitals. STUDIES ON THE HOSPITAL IN-PATIENT ENQUIRY REPORTS 1 to 10. Oxford: Records and Statistical Department 1960.

The above are examples of the further use made of statistics produced in the Hospital Inpatient Enquiry Reports.

7. Benjamin, B. and Perkins, T. A. MEASUREMENT OF BED USE AND DEMAND. *Hospital*, 51, 1. pp. 31–33. 1961.
This article gives a succinct statement of the way in which current statistics can be applied to measurement of bed usage.

8. Nuffield Provincial Hospital Trust. HOSPITAL AND COMMUNITY. Studies carried out by Ferguson T. & MacPhail, A. N. in Ayrshire and Stirlingshire. Oxford University Press. 1954.
A study of inpatient morbidity.

9. REPORT OF THE COMMITTEE OF ENQUIRY INTO THE COST OF THE NATIONAL HEALTH SERVICE. (Guillebaud Report.) London: H.S.M.O. 1956. Appendix 5: *Hospital Statistics*: Contains a summary of available and occupied beds, turnover, number of cases treated, inpatient and outpatient. Number of consultants from 1949 to 1954. This is taken as evidence of the increase in the amount of work, but by themselves such figures are not very useful as a measure of progress or otherwise. The Guillebaud Committee recommended the establishment of special research and statistics departments and operational research, including work on routine statistics of hospital occupancy and morbidity.

10. SCOTTISH HEALTH STATISTICS published annually since 1958 by the Scottish Home and Health Department.
Each volume is in 13 sections and deals with vital statistics, infectious diseases, maternity services, infant and child health, general medical services and the hospital and specialist services. There are sections also on mental health and analyses of the cost of the health services. Altogether, this publication is entirely composed of statistical tables. Runs to nearly 200 pages of statistical information.

11. HOSPITAL BED OCCUPANCY, a report of the first study group set up by the Administrative Staff College in 1954.
Deals with the calculation of bed occupancy, turnover of patients, length of stay, turnover interval.

*These are included because they provide the necessary population and mortality background statistics.

rk Study

epartment of Scientific and Industrial Re-
ch, INDUSTRIAL OPERATIONS UNIT.
s unit defines the industrial engineering as the
lication of the scientific method of manage-
t and administrative problems in any corporate
rprise that deals with people as well as
hines, materials, methods and procedures or
ems.

rie, R. M. WORK STUDY. London. 1960.
printed 1961).

Nadler, Gerald. MOTION AND TIME STUDY. New York: McGraw-Hill Book Co. 1955.

Nuffield Provincial Hospitals Trust. WORK OF NURSES IN HOSPITAL WARDS. Report of a job-analysis. London. 1953.

Nuffield Provincial Hospitals Trust. STUDIES IN FUNCTIONS AND DESIGN OF HOSPITALS. London. 1960.

Shaw, Anne. WORK STUDY. London: Columbia. 1960.

Taylor, F. W. SCIENTIFIC MANAGEMENT. London: Harper. 1947.

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